Answers to

1) $-\frac{4\pi}{3}$
2) $\frac{11\pi}{36}$
3) $\frac{\pi}{3}$
4) $-\frac{37\pi}{18}$
5) $-\frac{11\pi}{6}$
6) $-\frac{5\pi}{4}$
7) $\frac{5\pi}{3}$
8) $-\frac{47\pi}{12}$
9) $-\frac{\pi}{4}$
10) $\frac{11\pi}{3}$
11) 120°
12) -330°
13) 315°
14) 225°
15) -110°
16) -690°
17) 150°
18) -965°
19) 210°
20) -240°
21) -35°
22) 330°
23) $\frac{7\pi}{4}$
24) 140°
25) -90°
26) $\frac{\pi}{4}$
27) 780°
28) 245°
29) 270°
30) $\frac{43\pi}{36}$
31) -150°
32) $\frac{4\pi}{9}$
33) -255°
34) 530°
35) $\frac{5\pi}{9}$
36) -60°
37) 480°
38) $\frac{35\pi}{18}$
39) 165°
40) $-\frac{5\pi}{4}$
41) IV
42) I
43) II
44) I
45) II
46) III
47) II
48) III
49) III
50) IV
51) III
52) III
53) III
54) I
55) I
56) I
57) III
58) I
59) II
60) IV
61) $\frac{9\pi}{2}$
62) $-\frac{7\pi}{3}$
63) $-\frac{13\pi}{4}$
64) $\frac{7\pi}{12}$
65) $\frac{13\pi}{12}$
66) $\frac{16\pi}{3}$
67) $\frac{41\pi}{9}$
68) $\frac{7\pi}{3}$
69) $-\frac{13\pi}{3}$
70) $\frac{25\pi}{6}$
71) $-\frac{5\pi}{9}$
72) $\frac{17\pi}{3}$
73) $-\frac{13\pi}{6}$
74) $\frac{46\pi}{9}$
75) $-\frac{31\pi}{6}$
76) $\frac{16\pi}{3}$
77) $\frac{9\pi}{4}$
78) $-\frac{\pi}{4}$
79) $\frac{44\pi}{9}$
80) $\frac{29\pi}{6}$
81) $\frac{35\pi}{6}$
82) $-\frac{21\pi}{4}$
83) $-\frac{16\pi}{3}$
84) $-\frac{89\pi}{18}$
85) $-\frac{11\pi}{6}$
86) $\frac{2\pi}{3}$
87) $\frac{83\pi}{18}$
88) -3π
89) $\frac{19\pi}{4}$
90) $\frac{67\pi}{18}$
91) $\frac{\pi}{3}$
92) $\frac{\pi}{4}$
93) $\frac{5\pi}{12}$
94) $\frac{\pi}{4}$
95) $\frac{4\pi}{9}$
96) $\frac{\pi}{18}$
97) $\frac{2\pi}{9}$
98) $\frac{2\pi}{9}$
99) $\frac{\pi}{6}$
100) $\frac{\pi}{4}$
101) $\frac{\pi}{4}$
102) $\frac{\pi}{3}$
103) $\frac{\pi}{3}$
104) $\frac{\pi}{6}$

105) $\frac{\pi}{6}$

106) $\frac{\pi}{4}$

107) $\frac{\pi}{3}$

108) $\frac{2\pi}{9}$

109) $\frac{4\pi}{9}$

110) $\frac{\pi}{4}$

111) $\frac{\pi}{9}$

112) $\frac{\pi}{3}$

113) $\frac{\pi}{12}$

114) $\frac{\pi}{6}$

115) $\frac{4\pi}{9}$

116) $\frac{\pi}{3}$

117) $\frac{\pi}{3}$

118) $\frac{\pi}{6}$

119) $\frac{2\pi}{9}$

120) $\frac{\pi}{9}$

121) $\frac{5\pi}{6}$

122) $\frac{11\pi}{12}$

123) $\frac{71\pi}{36}$

124) $\frac{11\pi}{6}$

125) $\frac{7\pi}{12}$

126) $\frac{14\pi}{9}$

127) $\frac{17\pi}{12}$

128) $\frac{\pi}{3}$

129) $\frac{11\pi}{18}$

130) $\frac{97\pi}{90}$

131) $\frac{119\pi}{90}$ and $-\frac{241\pi}{90}$

132) $\frac{9\pi}{4}$ and $-\frac{7\pi}{4}$

133) $\frac{7\pi}{6}$ and $-\frac{5\pi}{6}$

134) $\frac{31\pi}{12}$ and $-\frac{17\pi}{12}$

135) $\frac{19\pi}{6}$ and $-\frac{5\pi}{6}$

136) $\frac{95\pi}{36}$ and $-\frac{49\pi}{36}$

137) $\frac{\pi}{45}$ and $-\frac{179\pi}{45}$

138) 3π and $-\pi$

139) $\frac{5\pi}{2}$ and $-\frac{3\pi}{2}$

140) $\frac{15\pi}{4}$ and $-\frac{\pi}{4}$

141) 5π ft

142) $\frac{35\pi}{3}$ m

143) 10π in

144) 24π ft

145) $\frac{25\pi}{3}$ in

146) $\frac{27\pi}{2}$ km

147) $\frac{56\pi}{3}$ yd

148) 21π m

149) $\frac{9\pi}{4}$ cm

150) $\frac{45\pi}{4}$ m

151) $\frac{33\pi}{4}$ cm

152) $\frac{8\pi}{3}$ in

153) $\frac{13\pi}{4}$ cm

154) $\frac{15\pi}{2}$ cm

155) $\frac{57\pi}{4}$ cm

156) $\frac{44\pi}{3}$ km

157) 18π ft

158) 9π km

159) $\frac{65\pi}{4}$ in

160) 13π cm

161) $\frac{11\pi}{2}$ ft

162) $\frac{55\pi}{12}$ mi

163) 7π yd

164) $\frac{45\pi}{4}$ ft

165) $\frac{22\pi}{3}$ m

166) 10π cm

167) $\frac{55\pi}{4}$ km

168) 3π cm

169) $\frac{85\pi}{3}$ ft

170) 16π cm

171) $\frac{85\pi}{4}$ mi

172) $\frac{27\pi}{2}$ in

173) $\frac{55\pi}{6}$ km

174) $\frac{56\pi}{3}$ km

175) $\frac{9\pi}{2}$ cm

176) $\frac{51\pi}{2}$ yd

177) $\frac{20\pi}{3}$ mi

178) 5π in

179) $\frac{28\pi}{3}$ yd

180) 20π mi

181) $\frac{375\pi}{4}$ in^2

182) 25π m^2

183) $\frac{363\pi}{4}$ cm^2

184) $\frac{243\pi}{4}$ ft^2

185) $\frac{25\pi}{2}$ mi^2

186) $\frac{49\pi}{2}$ km^2

187) 64π mi^2

188) $\frac{25\pi}{8}$ km^2

189) 192π yd^2

190) 24π mi^2

191) $\frac{297\pi}{8}$ cm^2

192) 9π yd^2

193) $\frac{28\pi}{3}$ ft^2

194) $\frac{245\pi}{8}$ ft^2

195) 120π km^2

196) $\frac{25\pi}{2}$ yd²

197) $\frac{75\pi}{8}$ km²

198) 49π mi²

199) $\frac{343\pi}{2}$ mi²

200) 60π m²

201) 48π cm²

202) $\frac{121\pi}{6}$ km²

203) 75π mi²

204) 90π mi²

205) $\frac{32\pi}{3}$ cm²

206) 147π km²

207) 16π m²

208) 192π ft²

209) 27π in²

210) $\frac{605\pi}{6}$ km²

211) $\frac{363\pi}{4}$ km²

212) $\frac{1183\pi}{8}$ mi²

213) $\frac{121\pi}{8}$ yd²

214) 160π m²

215) $\frac{98\pi}{3}$ ft²

216) $\frac{175\pi}{2}$ m²

217) 49π km²

218) $\frac{200\pi}{3}$ yd²

219) $\frac{128\pi}{3}$ ft²

220) 192π mi²

221) $\frac{8}{17}$

222) $\frac{5}{3}$

223) $\frac{3}{2}$

224) $\frac{\sqrt{10}}{10}$

225) $\frac{5}{4}$

226) $\frac{5\sqrt{19}}{57}$

227) $\frac{13}{5}$

228) $\frac{3}{5}$

229) $\frac{5}{12}$

230) $\frac{\sqrt{13}}{2}$

231) $\frac{7\sqrt{2}}{12}$

232) $\frac{\sqrt{13}}{3}$

233) $\frac{25}{7}$

234) $\frac{19\sqrt{3}}{24}$

235) $\frac{13}{12}$

236) $\frac{15}{8}$

237) $\frac{4}{5}$

238) $\frac{4}{3}$

239) $\frac{3}{2}$

240) $\frac{15}{8}$

241) $\frac{17}{8}$

242) $\frac{12}{5}$

243) $\frac{12}{13}$

244) $\frac{25}{7}$

245) $\frac{3}{5}$

246) $\frac{13\sqrt{17}}{85}$

247) $\frac{3}{4}$

248) $\sqrt{2}$

249) $\frac{3}{5}$

250) $\frac{3}{5}$

251) $\frac{17}{15}$

252) $\frac{8}{15}$

253) $\frac{6}{5}$

254) $\frac{4}{3}$

255) $\frac{3}{5}$

256) $\frac{4}{3}$

257) $\frac{3}{2}$

258) $\frac{7}{25}$

259) $\frac{19}{11}$

260) $-\frac{3}{2}$

261) $\frac{\sqrt{3}}{2}$

262) $\frac{\sqrt{5}}{3}$

263) $-\frac{\sqrt{17}}{9}$

264) $-\frac{\sqrt{2}}{2}$

265) $-\frac{\sqrt{15}}{7}$

266) $-\frac{\sqrt{10}}{3}$

267) $\frac{16\sqrt{17}}{85}$

268) $-\frac{6\sqrt{11}}{11}$

269) $-\frac{4}{3}$

270) 1

271) $-\frac{3}{4}$

272) $\frac{8}{9}$

273) $-\sqrt{2}$

274) $-\frac{1}{2}$

275) $-\frac{4\sqrt{7}}{7}$

276) $\frac{3\sqrt{10}}{10}$

277) $-\frac{3}{4}$

278) $-\frac{3\sqrt{5}}{5}$

279) $-\frac{\sqrt{17}}{9}$

280) 2

281) $\frac{9}{8}$

282) $\frac{6}{5}$

283) $\frac{2}{3}$

284) -2

285) $\frac{17\sqrt{13}}{65}$

286) $-\frac{\sqrt{11}}{6}$

287) $-\frac{\sqrt{11}}{6}$

288) $\frac{2\sqrt{5}}{5}$

289) -1

290) $-\frac{\sqrt{15}}{7}$

291) $\frac{\sqrt{11}}{6}$

292) $\frac{\sqrt{3}}{3}$

293) $\frac{8\sqrt{15}}{15}$

294) $\frac{2\sqrt{5}}{5}$

295) $\frac{4}{5}$

296) $\sqrt{10}$

297) $-\frac{3\sqrt{5}}{5}$

298) $-\frac{5}{3}$

299) $-\frac{2\sqrt{3}}{3}$

300) $\sqrt{3}$

301) -2

302) 1

303) $\frac{2\sqrt{3}}{3}$

304) $\sqrt{2}$

305) $-\frac{\sqrt{3}}{3}$

306) Undefined

307) $\sqrt{2}$

308) $\frac{\sqrt{3}}{3}$

309) $\sqrt{2}$

310) -1

311) $-\frac{\sqrt{3}}{3}$

312) 1

313) $\frac{2\sqrt{3}}{3}$

314) $\frac{\sqrt{3}}{2}$

315) $\sqrt{3}$

316) 0

317) Undefined

318) -1

319) -1

320) $\frac{\sqrt{3}}{2}$

321) $\frac{2\sqrt{3}}{3}$

322) $\sqrt{2}$

323) -1

324) $-\sqrt{2}$

325) $\frac{\sqrt{3}}{3}$

326) 2

327) $\frac{\sqrt{2}}{2}$

328) $\frac{\sqrt{3}}{3}$

329) -1

330) 0

331) Undefined

332) 2

333) $\frac{1}{2}$

334) $-\sqrt{3}$

335) 2

336) 0

337) -1

338) $-\frac{1}{2}$

339) $\frac{5}{4}$

340) $\sqrt{2}$

341) $-\frac{\pi}{6}$

342) 0

343) $\frac{3}{16}$

344) $\frac{\pi}{4}$

345) $\frac{\sqrt{5}}{5}$

346) $\frac{\sqrt{19}}{10}$

347) $\frac{5}{12}$

348) $\frac{3\sqrt{34}}{34}$

349) $\frac{12}{13}$

350) $\frac{1}{2}$

351) $\frac{\sqrt{13}}{2}$

352) 4

353) $\frac{\sqrt{7}}{4}$

354) π

355) $-\frac{\pi}{2}$

356) $\frac{5}{3}$

357) $\frac{3\sqrt{3}}{14}$

358) 1

359) $-\frac{\pi}{6}$

360) 1

361) $\frac{3}{4}$

362) $\frac{5}{4}$

363) $-\frac{\pi}{3}$

364) $\frac{4}{3}$

365) $\frac{\sqrt{10}}{10}$

366) $\frac{\pi}{2}$

367) $\frac{5}{4}$

368) 1

369) $-\frac{\pi}{4}$

370) $\frac{19}{16}$

371) $\frac{\pi}{6}$

372) $\frac{16\sqrt{247}}{247}$

373) $-\frac{\pi}{4}$

374) $\frac{3\pi}{4}$

375) $-\frac{\pi}{2}$

376) $\frac{\pi}{2}$

377) $\frac{\sqrt{221}}{17}$

378) $\frac{\pi}{4}$

379) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$

380) $\left\{\frac{7\pi}{6}, \frac{11\pi}{6}\right\}$

381) No solution.

382) $\left\{\frac{\pi}{4}, \frac{5\pi}{4}\right\}$

383) $\left\{\frac{\pi}{4}, \frac{3\pi}{4}\right\}$

384) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$

385) $\{0, \pi\}$

386) $\{0\}$

387) $\left\{\frac{5\pi}{4}, \frac{7\pi}{4}\right\}$

388) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

389) $\left\{\frac{\pi}{3}, \frac{2\pi}{3}\right\}$

390) $\left\{\frac{2\pi}{3}, \frac{4\pi}{3}\right\}$

391) $\left\{\frac{2\pi}{3}, \frac{5\pi}{3}\right\}$

392) $\left\{\frac{\pi}{3}, \frac{4\pi}{3}\right\}$

393) $\left\{\frac{\pi}{3}, \frac{4\pi}{3}\right\}$

394) $\left\{\frac{3\pi}{4}, \frac{5\pi}{4}\right\}$

395) $\left\{\frac{4\pi}{3}, \frac{5\pi}{3}\right\}$

396) No solution.

397) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$

398) $\left\{\frac{\pi}{4}, \frac{5\pi}{4}\right\}$

399) $\left\{\frac{5\pi}{4}, \frac{7\pi}{4}\right\}$

400) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

401) $\left\{\frac{2\pi}{3}, \frac{5\pi}{3}\right\}$

402) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

403) $\left\{\frac{5\pi}{6}, \frac{7\pi}{6}\right\}$

404) $\left\{\frac{2\pi}{3}, \frac{4\pi}{3}\right\}$

405) $\left\{\frac{4\pi}{3}, \frac{5\pi}{3}\right\}$

406) $\{\pi\}$

407) $\{0, \pi\}$

408) $\left\{\frac{7\pi}{6}, \frac{11\pi}{6}\right\}$

409) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$

410) $\left\{\frac{5\pi}{4}, \frac{7\pi}{4}\right\}$

411) $\{0, \pi\}$

412) $\left\{\frac{5\pi}{4}, \frac{7\pi}{4}\right\}$

413) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

414) $\left\{\frac{\pi}{4}, \frac{5\pi}{4}\right\}$

415) $\left\{\frac{4\pi}{3}, \frac{5\pi}{3}\right\}$

416) $\{0, \pi\}$

417) $\{0\}$

418) $\{0\}$

419) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$

420) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

421) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

422) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$

423) $\{0, \pi\}$

424) $\left\{\frac{3\pi}{4}, \frac{5\pi}{4}\right\}$

425) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

426) $\left\{\frac{\pi}{4}, \frac{5\pi}{4}\right\}$

427) $\left\{\frac{3\pi}{2}\right\}$

428) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

429) $\left\{\frac{2\pi}{3}, \frac{5\pi}{3}\right\}$

430) $\left\{\frac{7\pi}{6}, \frac{11\pi}{6}\right\}$

431) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$

432) $\left\{\frac{2\pi}{3}, \frac{4\pi}{3}\right\}$

433) $\left\{\frac{2\pi}{3}, \frac{4\pi}{3}\right\}$

434) $\left\{\frac{4\pi}{3}, \frac{5\pi}{3}\right\}$

435) $\{0\}$

436) $\left\{\frac{\pi}{6}, \frac{5\pi}{6}\right\}$

437) No solution.

438) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

439) $\left\{\frac{3\pi}{8}, \frac{7\pi}{8}, \frac{11\pi}{8}, \frac{15\pi}{8}\right\}$

440) $\left\{\frac{\pi}{12}, \frac{\pi}{6}, \frac{7\pi}{12}, \frac{2\pi}{3}, \frac{13\pi}{12}, \frac{7\pi}{6}, \frac{19\pi}{12}, \frac{5\pi}{3}\right\}$

441) $\{0\}$

442) $\{\pi\}$

443) $\left\{\frac{\pi}{24}, \frac{7\pi}{24}, \frac{13\pi}{24}, \frac{19\pi}{24}, \frac{25\pi}{24}, \frac{31\pi}{24}, \frac{37\pi}{24}, \frac{43\pi}{24}\right\}$

444) No solution.

445) $\left\{\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}\right\}$

446) $\left\{\frac{5\pi}{12}, \frac{11\pi}{12}, \frac{17\pi}{12}, \frac{23\pi}{12}\right\}$

447) $\{\pi\}$

448) $\left\{\frac{7\pi}{24}, \frac{11\pi}{24}, \frac{19\pi}{24}, \frac{23\pi}{24}, \frac{31\pi}{24}, \frac{35\pi}{24}, \frac{43\pi}{24}, \frac{47\pi}{24}\right\}$

449) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$

450) $\left\{\pi, \frac{3\pi}{2}\right\}$

451) $\left\{\frac{19\pi}{12}, \frac{23\pi}{12}\right\}$

452) $\left\{\frac{13\pi}{12}, \frac{19\pi}{12}\right\}$

453) No solution.

454) No solution.

455) $\left\{\frac{\pi}{3}, \frac{4\pi}{3}\right\}$

456) $\left\{0, \frac{2\pi}{3}\right\}$

457) $\left\{\frac{2\pi}{3}, \pi\right\}$

458) $\left\{\frac{5\pi}{6}, \frac{3\pi}{2}\right\}$

459) $\left\{\frac{11\pi}{12}, \frac{23\pi}{12}\right\}$ 460) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$ 461) $\left\{\frac{\pi}{6}\right\}$

462) $\left\{\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}\right\}$ 463) $\left\{\frac{7\pi}{12}, \frac{11\pi}{12}, \frac{19\pi}{12}, \frac{23\pi}{12}\right\}$ 464) No solution.

465) No solution. 466) $\{0, \pi\}$ 467) $\left\{\frac{2\pi}{3}\right\}$ 468) $\{0\}$

469) $\left\{\frac{\pi}{8}, \frac{3\pi}{8}, \frac{9\pi}{8}, \frac{11\pi}{8}\right\}$ 470) No solution. 471) $\left\{\frac{5\pi}{12}, \frac{7\pi}{12}, \frac{17\pi}{12}, \frac{19\pi}{12}\right\}$

472) $\left\{\frac{7\pi}{6}, \frac{11\pi}{6}\right\}$ 473) $\left\{\frac{3\pi}{2}\right\}$ 474) $\left\{\frac{\pi}{16}, \frac{5\pi}{16}, \frac{9\pi}{16}, \frac{13\pi}{16}, \frac{17\pi}{16}, \frac{21\pi}{16}, \frac{25\pi}{16}, \frac{29\pi}{16}\right\}$

475) $\left\{\frac{\pi}{4}, \frac{5\pi}{4}\right\}$ 476) $\left\{\frac{\pi}{6}, \frac{\pi}{3}, \frac{2\pi}{3}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{4\pi}{3}, \frac{5\pi}{3}, \frac{11\pi}{6}\right\}$

477) $\left\{\frac{5\pi}{12}, \frac{11\pi}{12}, \frac{17\pi}{12}, \frac{23\pi}{12}\right\}$ 478) $\left\{\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}\right\}$

479) $\left\{\frac{7\pi}{36}, \frac{19\pi}{36}, \frac{31\pi}{36}, \frac{43\pi}{36}, \frac{55\pi}{36}, \frac{67\pi}{36}\right\}$ 480) $\left\{\frac{\pi}{8}, \frac{9\pi}{8}\right\}$

481) $\left\{\frac{\pi}{12}, \frac{\pi}{3}, \frac{7\pi}{12}, \frac{5\pi}{6}, \frac{13\pi}{12}, \frac{4\pi}{3}, \frac{19\pi}{12}, \frac{11\pi}{6}\right\}$ 482) $\left\{\frac{\pi}{9}, \frac{5\pi}{9}, \frac{7\pi}{9}, \frac{11\pi}{9}, \frac{13\pi}{9}, \frac{17\pi}{9}\right\}$

483) $\left\{\frac{13\pi}{48}, \frac{19\pi}{48}, \frac{37\pi}{48}, \frac{43\pi}{48}, \frac{61\pi}{48}, \frac{67\pi}{48}, \frac{85\pi}{48}, \frac{91\pi}{48}\right\}$

484) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$ 485) $\left\{\frac{5\pi}{8}, \frac{7\pi}{8}, \frac{13\pi}{8}, \frac{15\pi}{8}\right\}$ 486) $\left\{\frac{5\pi}{24}, \frac{17\pi}{24}, \frac{29\pi}{24}, \frac{41\pi}{24}\right\}$

487) $\left\{\frac{5\pi}{18}, \frac{11\pi}{18}, \frac{17\pi}{18}, \frac{23\pi}{18}, \frac{29\pi}{18}, \frac{35\pi}{18}\right\}$ 488) $\left\{\frac{\pi}{6}, \frac{2\pi}{3}, \frac{7\pi}{6}, \frac{5\pi}{3}\right\}$

489) $\left\{0, \frac{\pi}{2}, \frac{2\pi}{3}, \frac{7\pi}{6}, \frac{4\pi}{3}, \frac{11\pi}{6}\right\}$ 490) $\left\{\frac{\pi}{8}, \frac{3\pi}{8}, \frac{5\pi}{8}, \frac{7\pi}{8}, \frac{9\pi}{8}, \frac{11\pi}{8}, \frac{13\pi}{8}, \frac{15\pi}{8}\right\}$

491) $\left\{\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}\right\}$ 492) $\left\{\frac{5\pi}{36}, \frac{13\pi}{36}, \frac{29\pi}{36}, \frac{37\pi}{36}, \frac{53\pi}{36}, \frac{61\pi}{36}\right\}$

493) $\left\{\frac{\pi}{4}, \frac{5\pi}{12}, \frac{3\pi}{4}, \frac{11\pi}{12}, \frac{5\pi}{4}, \frac{17\pi}{12}, \frac{7\pi}{4}, \frac{23\pi}{12}\right\}$ 494) $\left\{\frac{\pi}{24}, \frac{19\pi}{24}, \frac{25\pi}{24}, \frac{43\pi}{24}\right\}$

495) $\left\{\frac{7\pi}{24}, \frac{11\pi}{24}, \frac{31\pi}{24}, \frac{35\pi}{24}\right\}$ 496) $\left\{\frac{3\pi}{2}\right\}$ 497) No solution.

498) $\left\{\frac{5\pi}{6}\right\}$ 499) $\{0\}$ 500) $\left\{\frac{\pi}{8}, \frac{9\pi}{8}\right\}$

501) $\left\{0, \frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \pi, \frac{5\pi}{4}, \frac{3\pi}{2}, \frac{7\pi}{4}\right\}$ 502) $\left\{\frac{\pi}{4}, \frac{7\pi}{12}, \frac{11\pi}{12}, \frac{5\pi}{4}, \frac{19\pi}{12}, \frac{23\pi}{12}\right\}$

503) $\left\{\frac{\pi}{6}, \frac{\pi}{2}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{3\pi}{2}, \frac{11\pi}{6}\right\}$ 504) $\left\{\frac{\pi}{4}, \frac{7\pi}{12}, \frac{5\pi}{4}, \frac{19\pi}{12}\right\}$ 505) No solution.

506) $\left\{\frac{\pi}{24}, \frac{7\pi}{24}, \frac{13\pi}{24}, \frac{19\pi}{24}, \frac{25\pi}{24}, \frac{31\pi}{24}, \frac{37\pi}{24}, \frac{43\pi}{24}\right\}$ 507) $\left\{\frac{5\pi}{12}, \frac{3\pi}{4}, \frac{17\pi}{12}, \frac{7\pi}{4}\right\}$

508) $\{0\}$ 509) $\{0\}$ 510) $\left\{\frac{5\pi}{6}, \frac{11\pi}{6}\right\}$

511) $\left\{\frac{7\pi}{18}, \frac{\pi}{2}, \frac{19\pi}{18}, \frac{7\pi}{6}, \frac{31\pi}{18}, \frac{11\pi}{6}\right\}$ 512) $\left\{\frac{\pi}{2}, \frac{11\pi}{6}\right\}$ 513) $\left\{\frac{\pi}{9}, \frac{7\pi}{9}, \frac{13\pi}{9}\right\}$

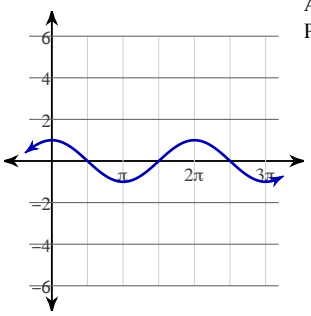
514) $\{0\}$ 515) No solution. 516) $\left\{\frac{5\pi}{18}, \frac{11\pi}{18}, \frac{17\pi}{18}, \frac{23\pi}{18}, \frac{29\pi}{18}, \frac{35\pi}{18}\right\}$

517) $\left\{\frac{\pi}{24}, \frac{13\pi}{24}, \frac{25\pi}{24}, \frac{37\pi}{24}\right\}$

518) $\left\{\frac{2\pi}{3}, \frac{5\pi}{3}\right\}$

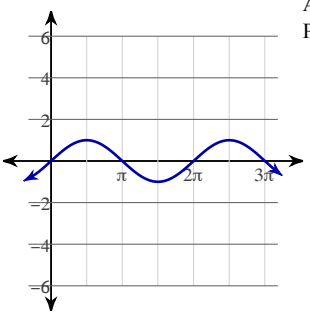
519)

Amplitude: 1
Period: 2π



520)

Amplitude: 1
Period: 2π



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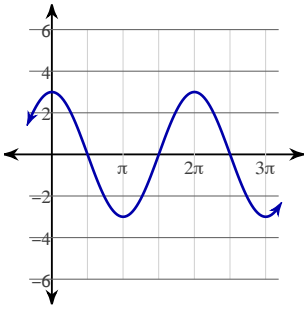

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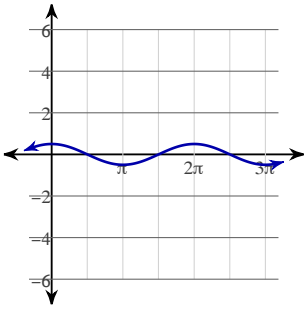

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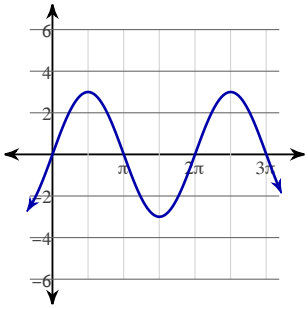

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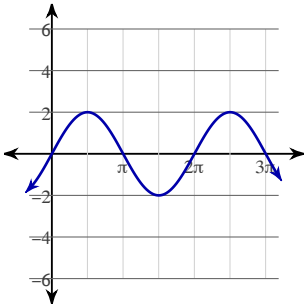

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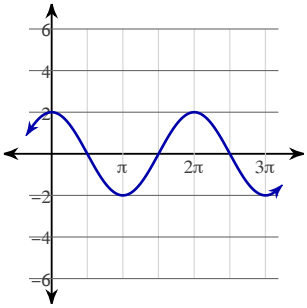

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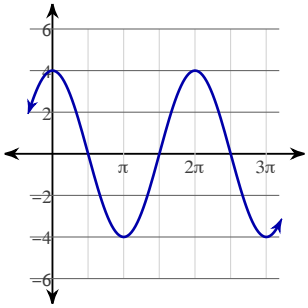

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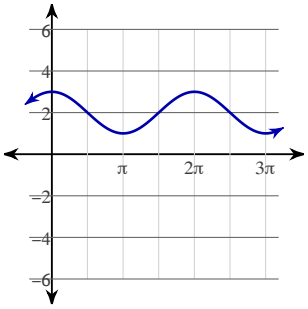

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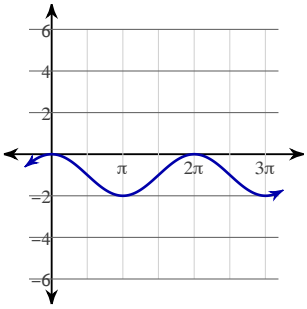

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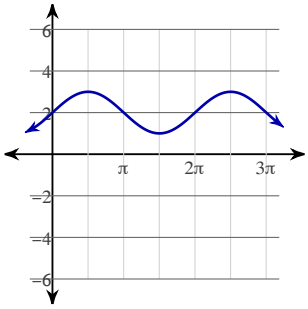

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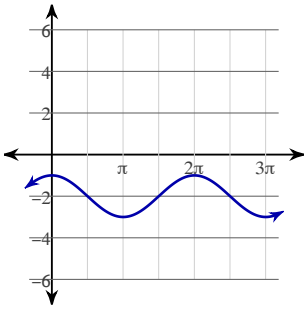

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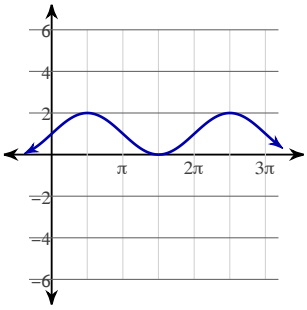

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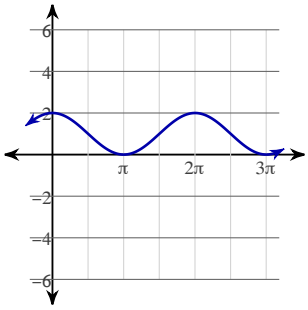

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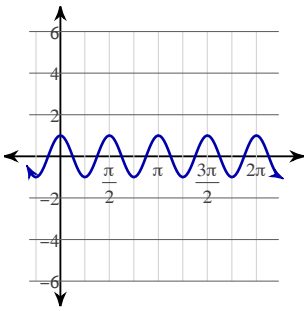

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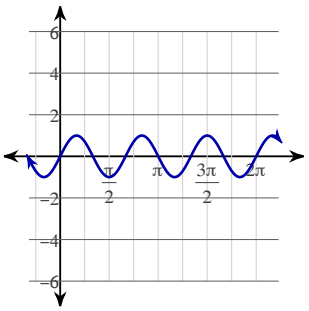

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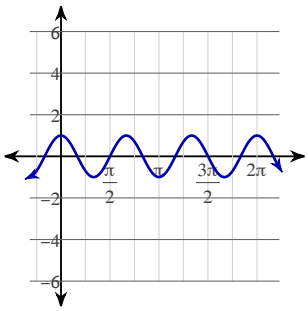

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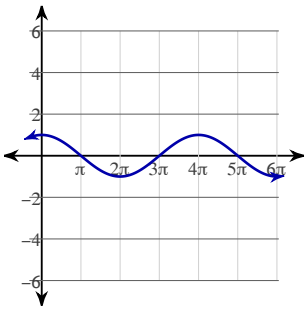

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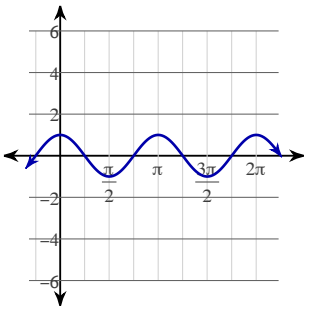

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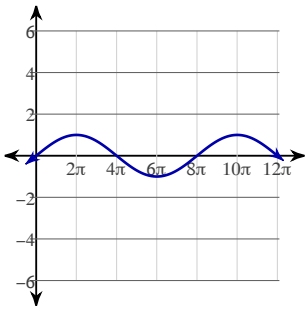

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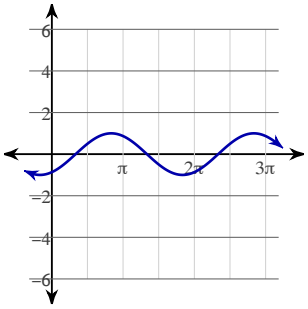

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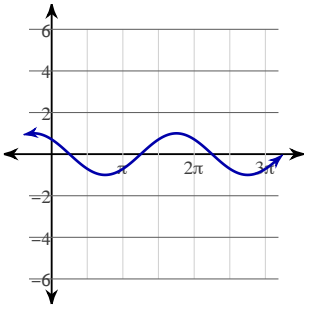

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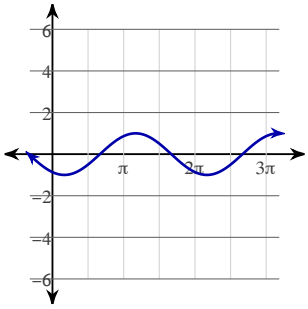

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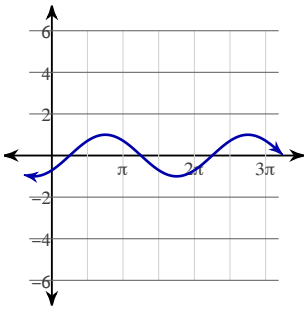

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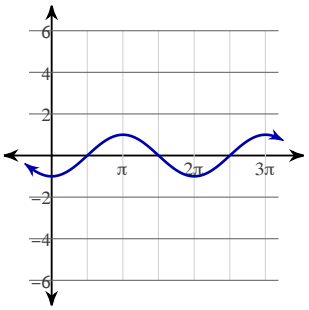

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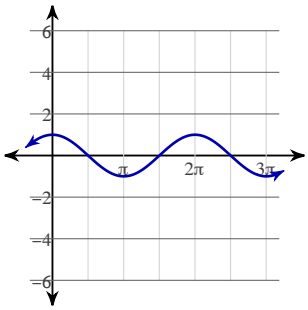

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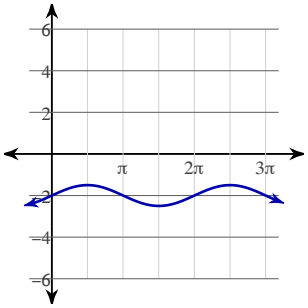

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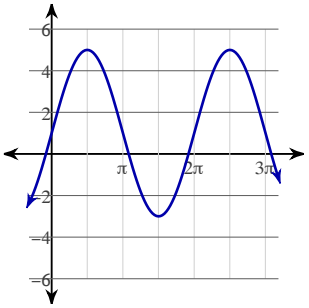

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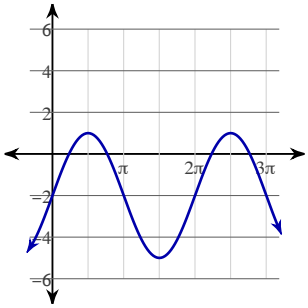

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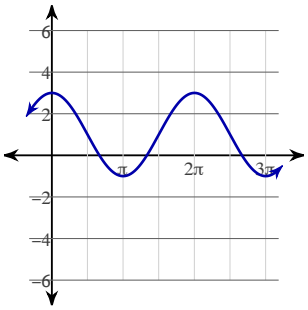

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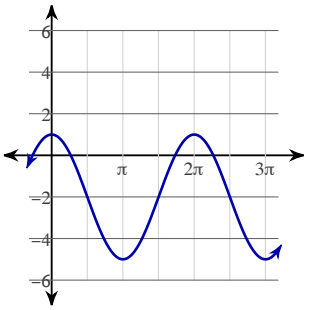

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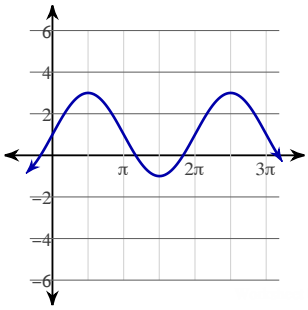

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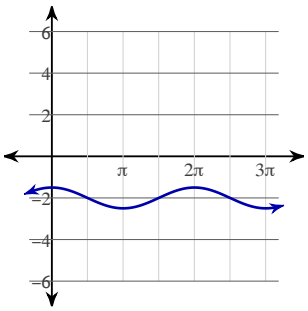

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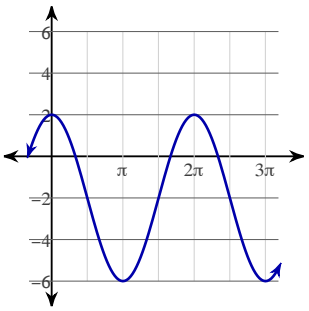

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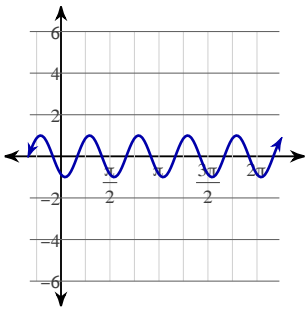

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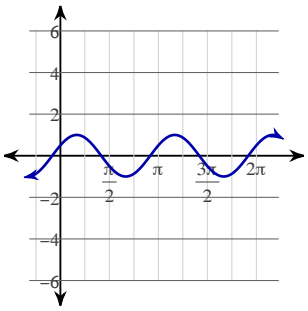

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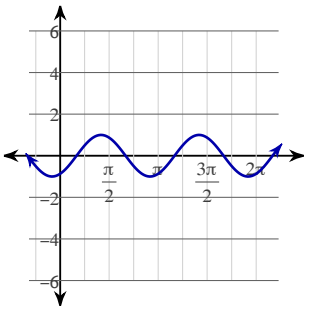

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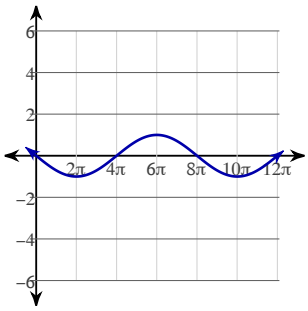

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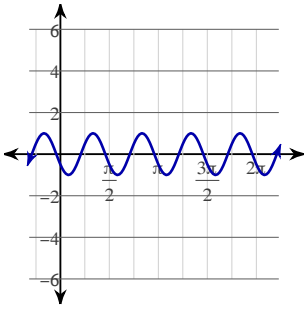

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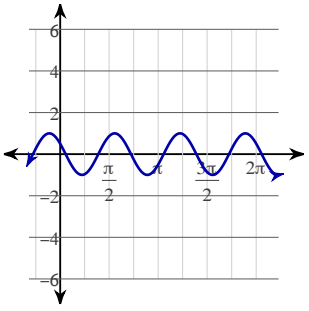

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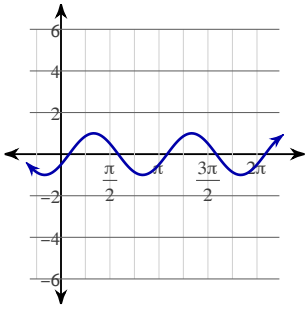

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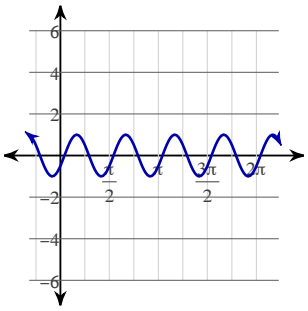

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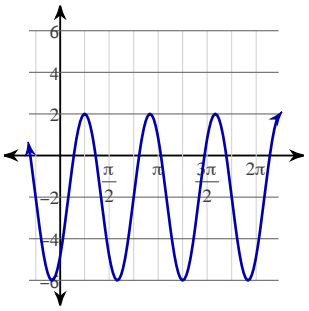

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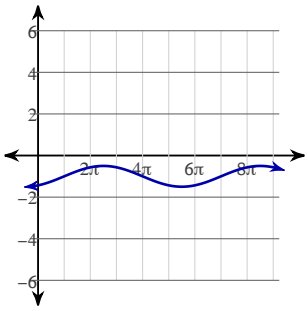

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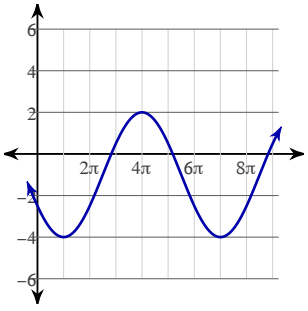

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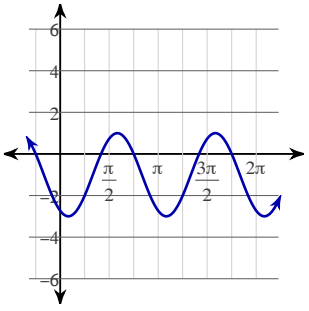

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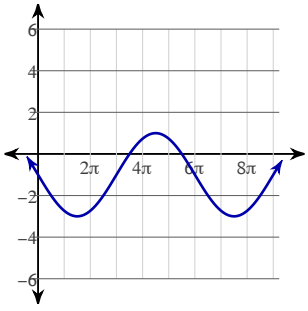

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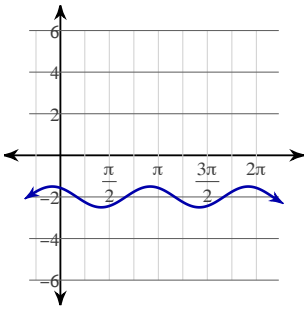

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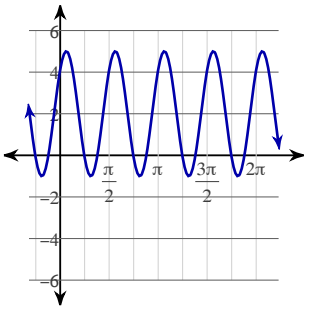

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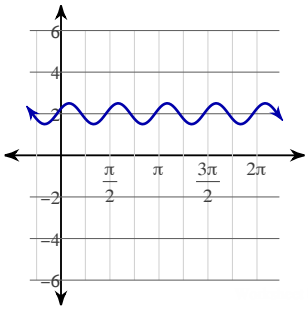

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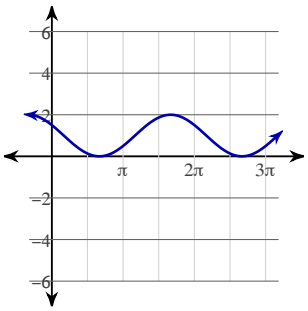

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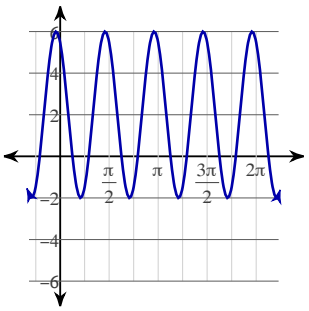

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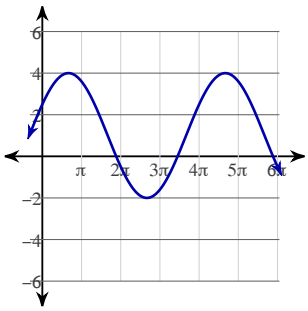

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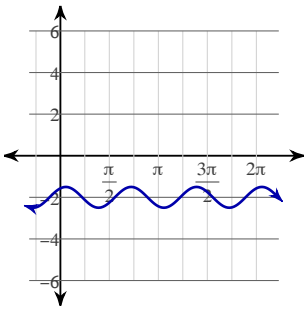

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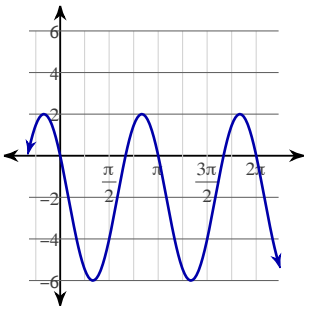

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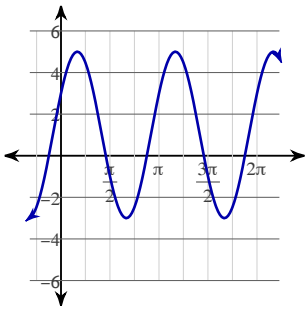

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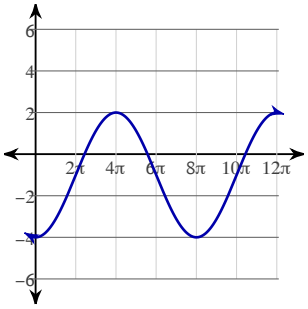

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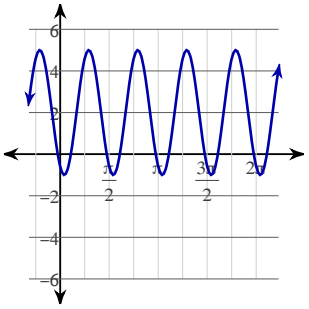

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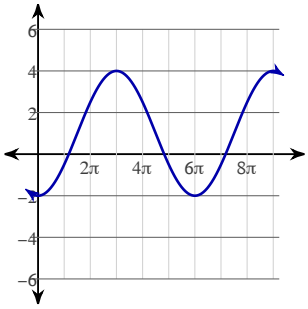

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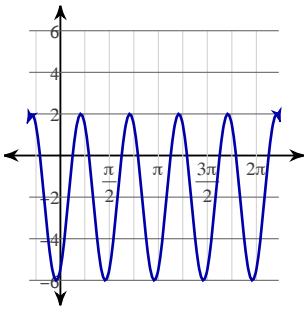

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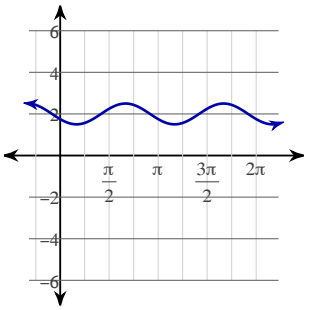

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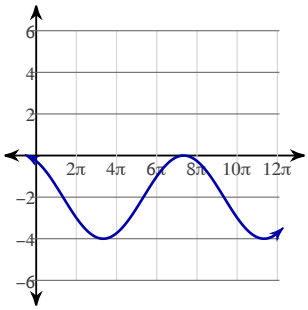

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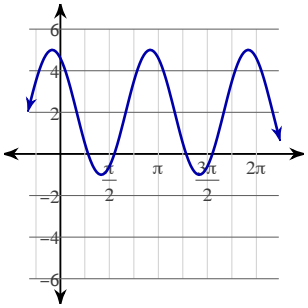

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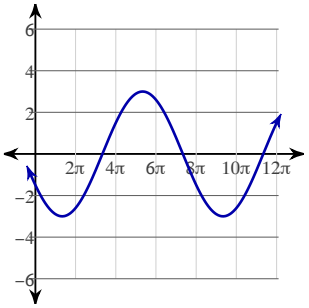

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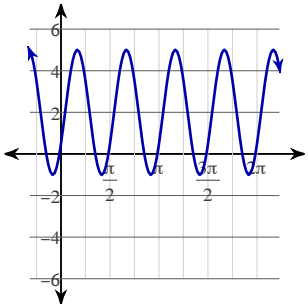

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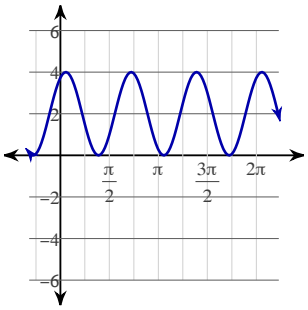

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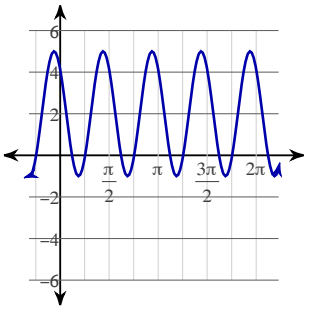

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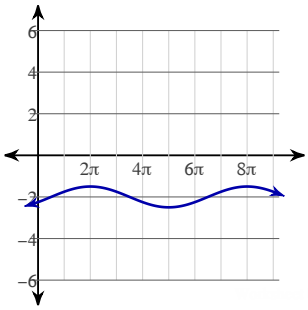

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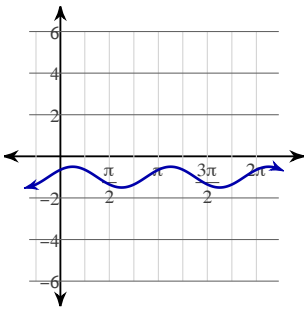

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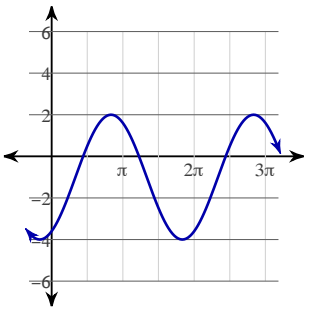

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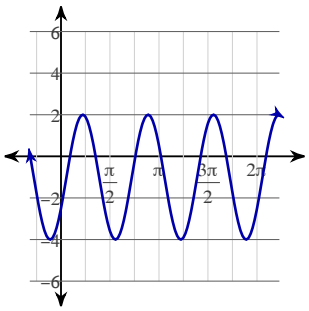

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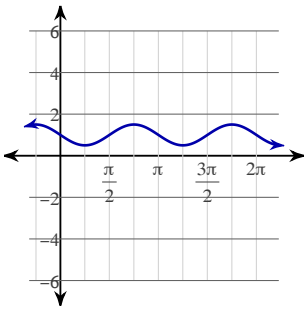

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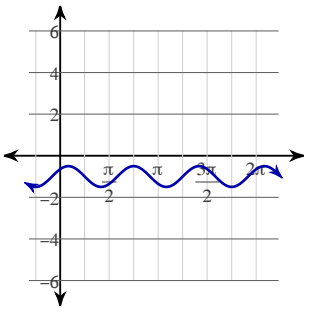

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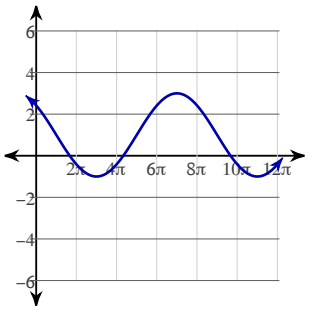

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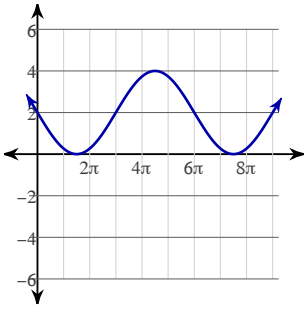

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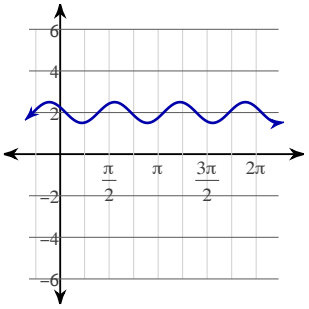

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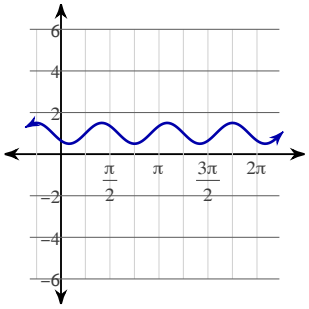

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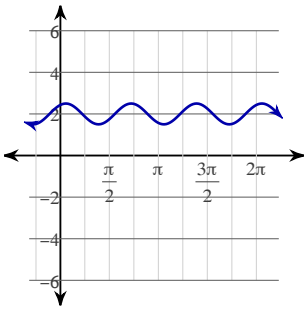

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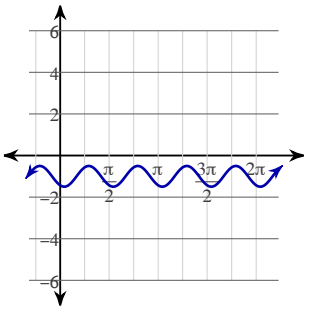

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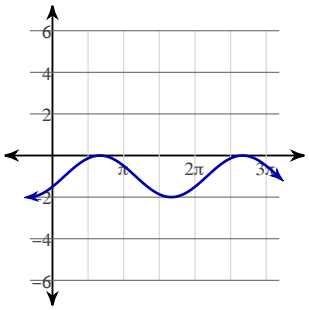

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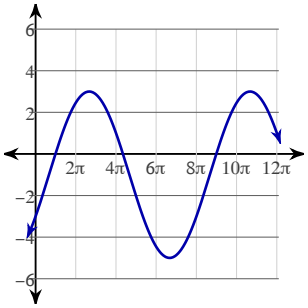

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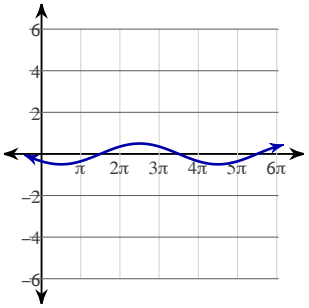

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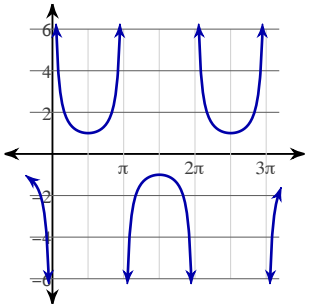

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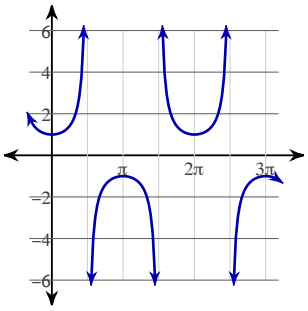

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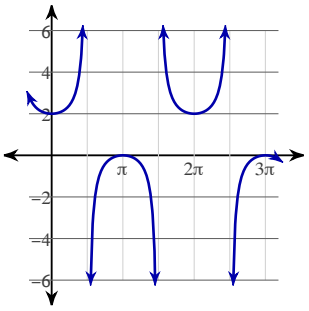

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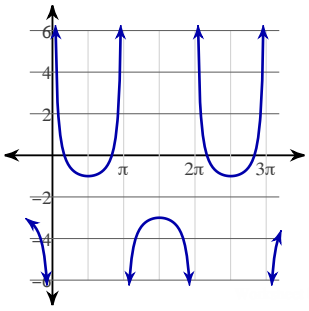

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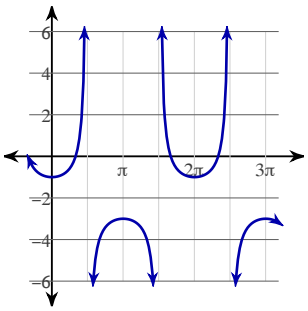

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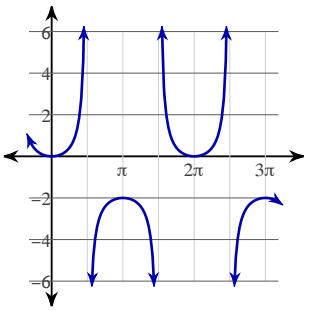

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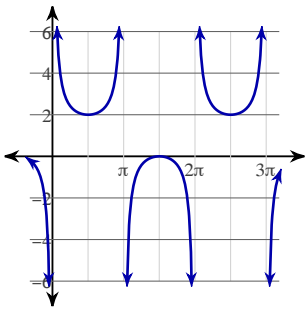

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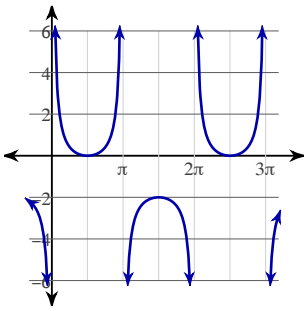

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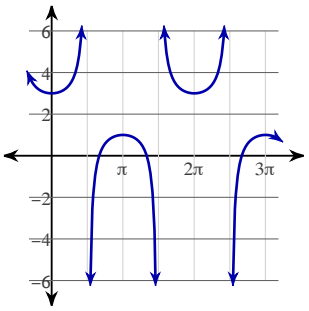

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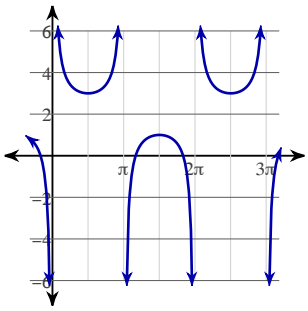

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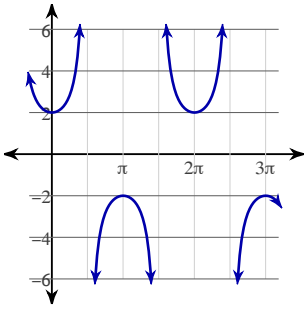

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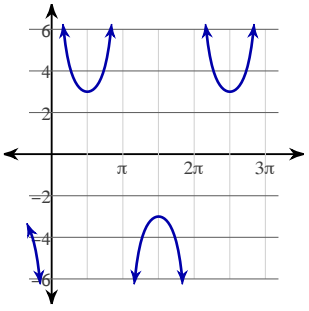

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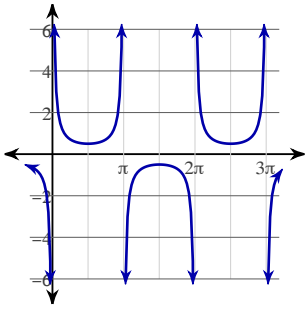

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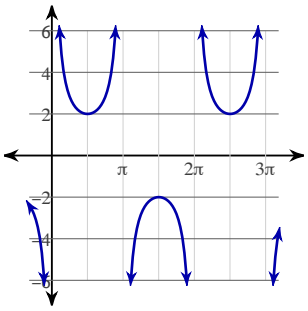

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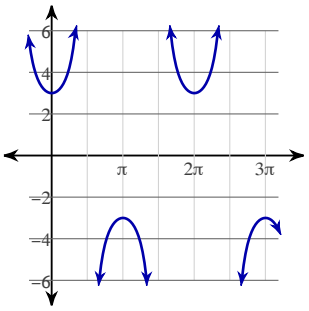

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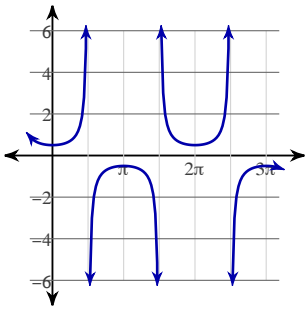

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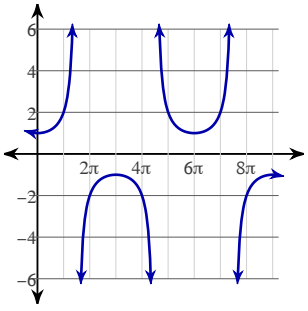

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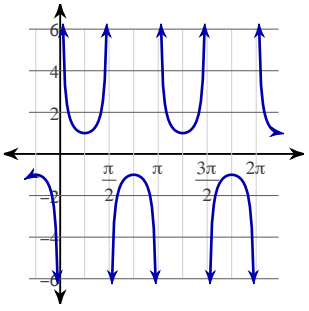

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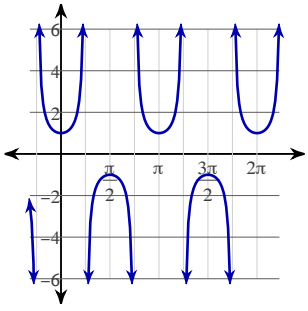

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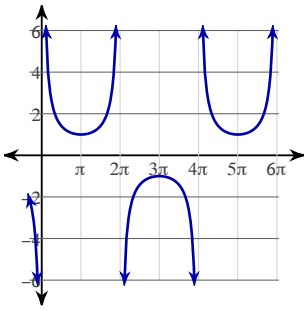

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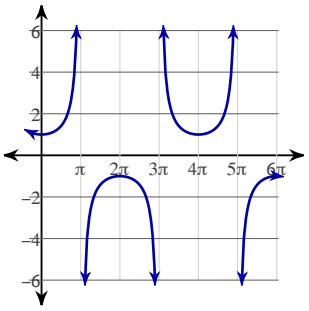

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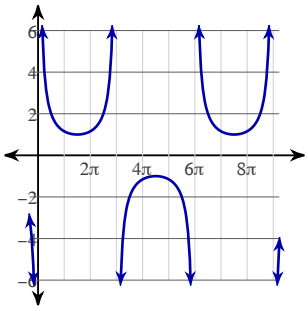

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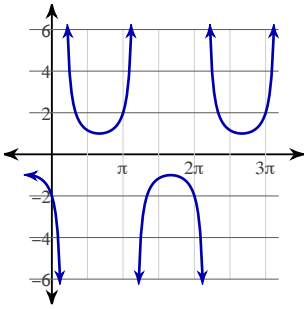

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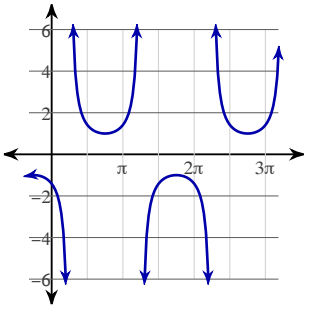

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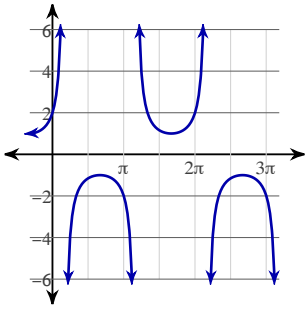

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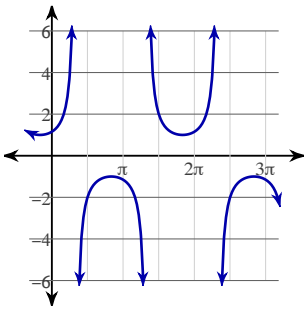

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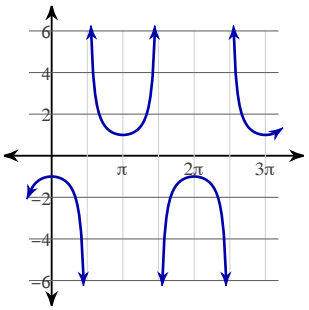

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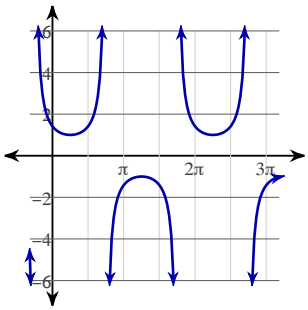

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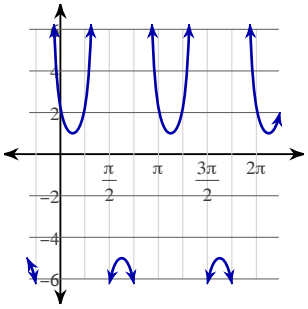

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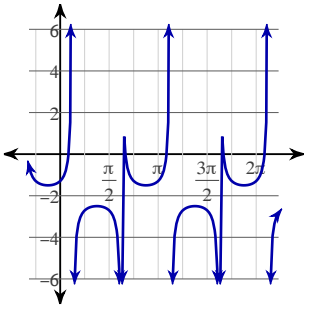

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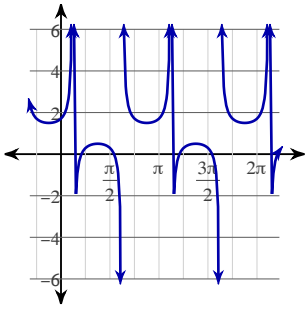

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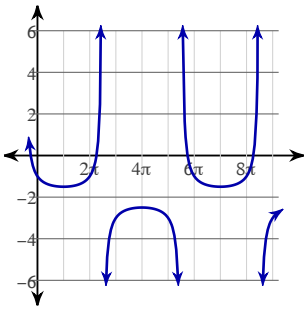

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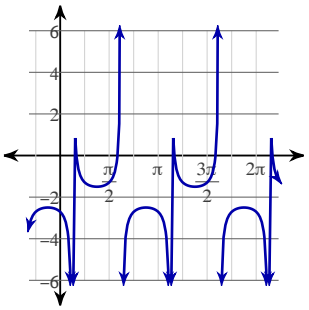

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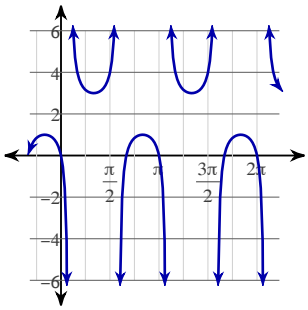

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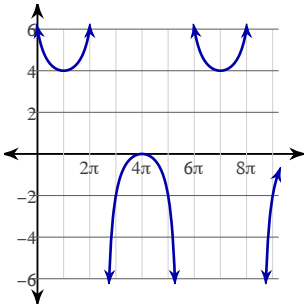

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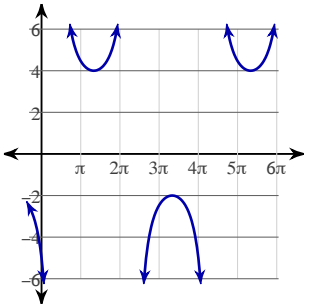

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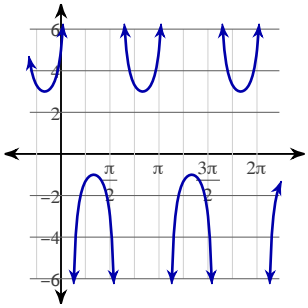

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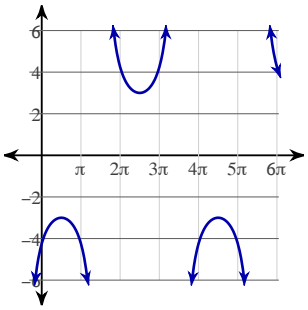

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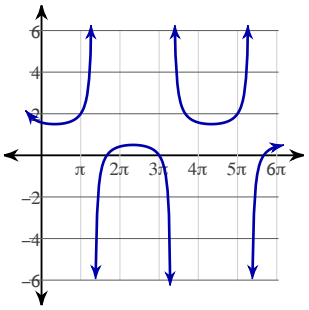

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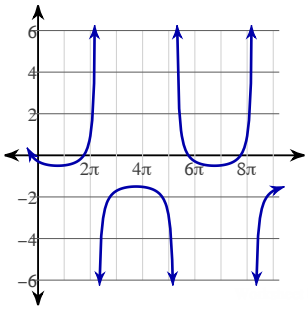

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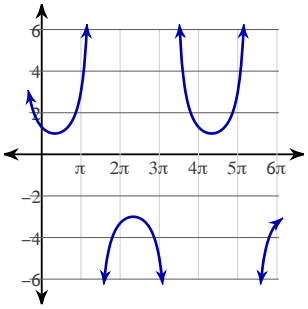

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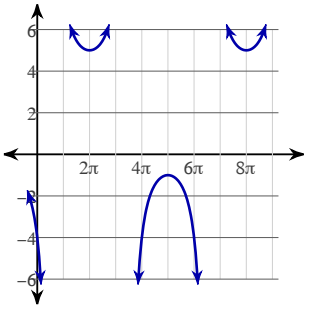

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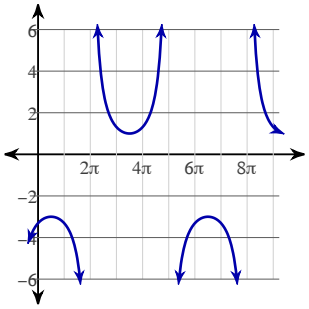

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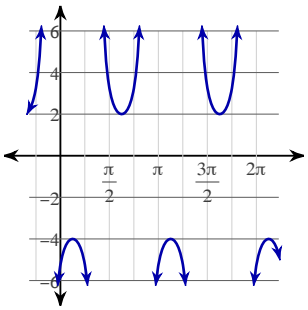

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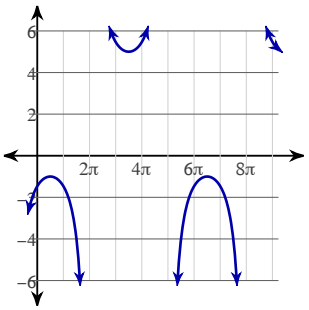

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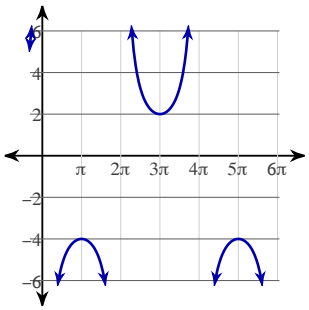

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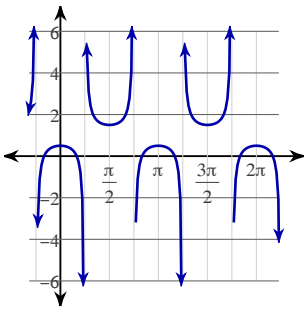

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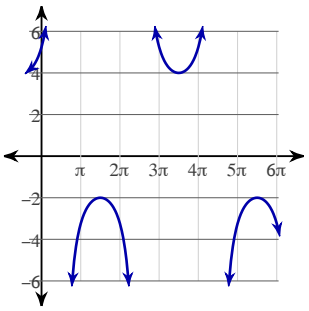

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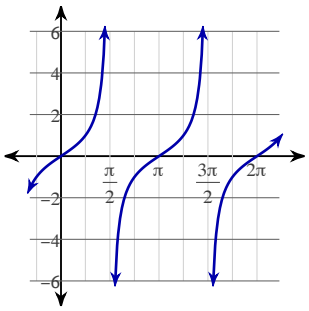

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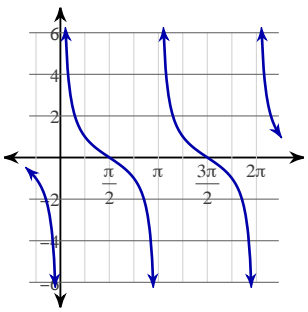

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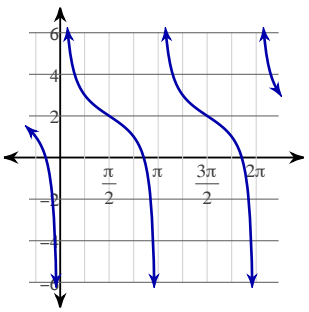

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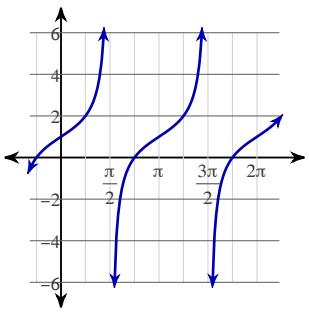

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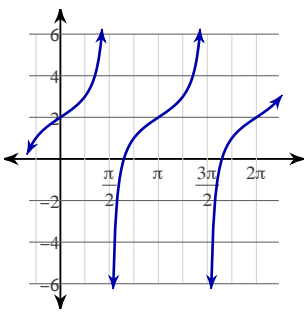

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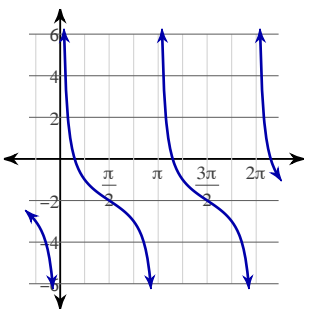

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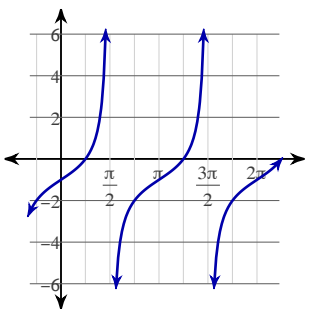

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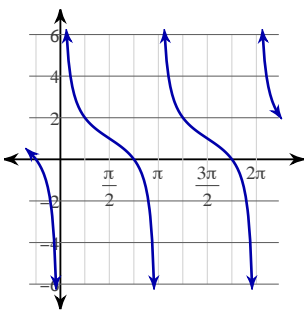

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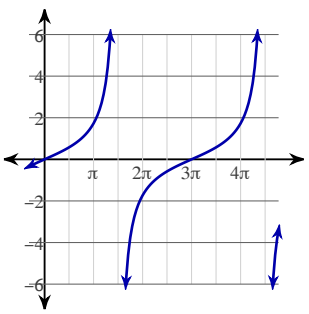

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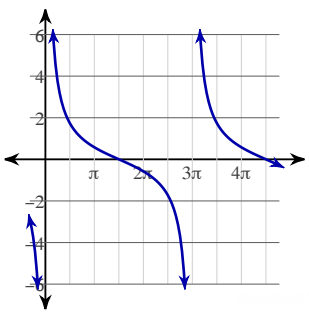

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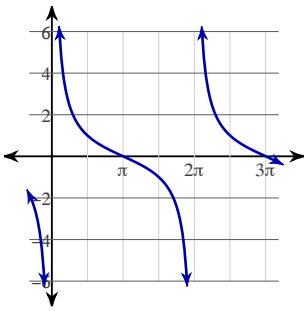

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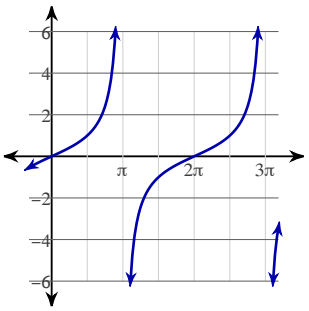

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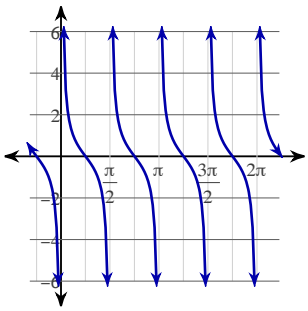

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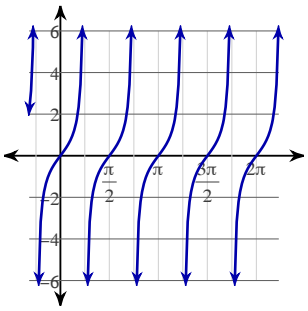

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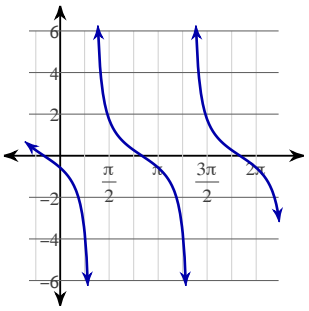

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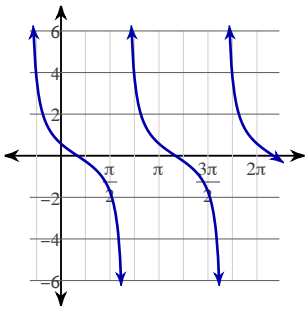

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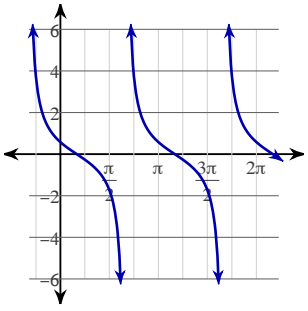

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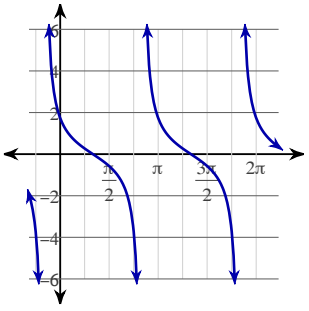

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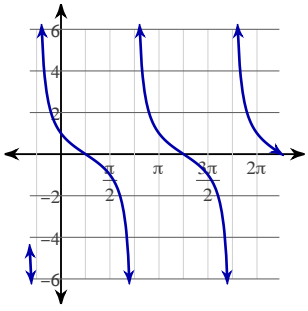

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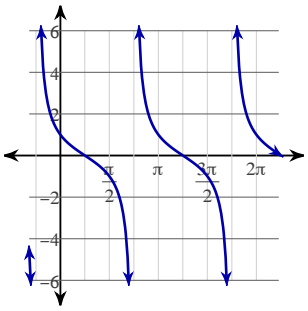

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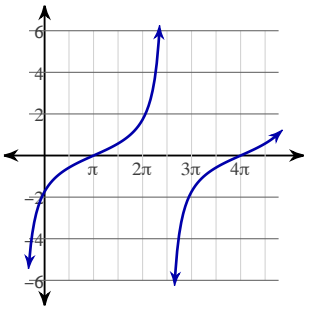

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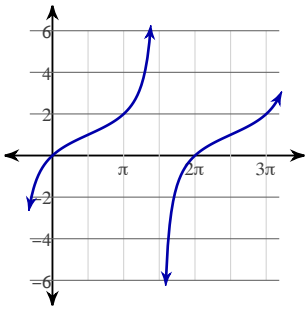

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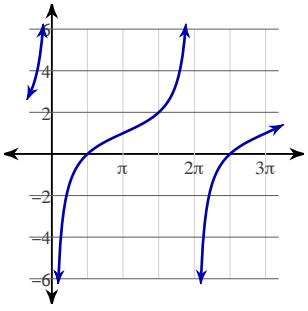

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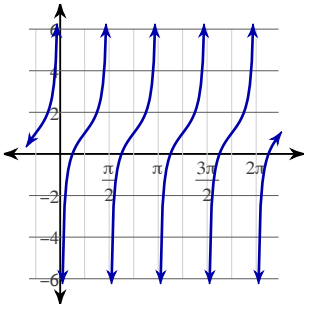

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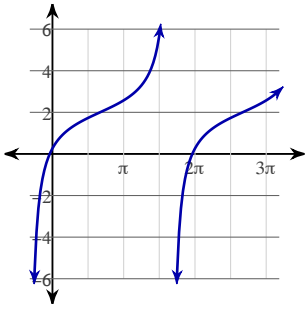

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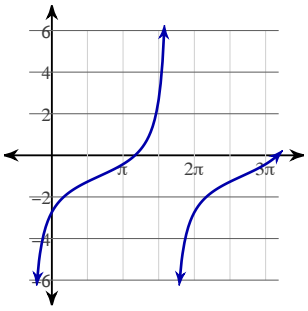

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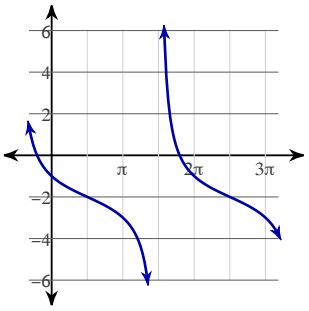

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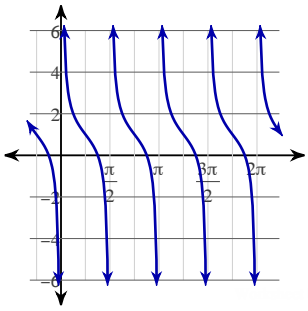
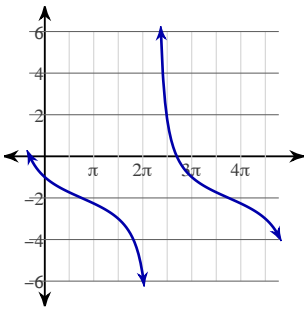
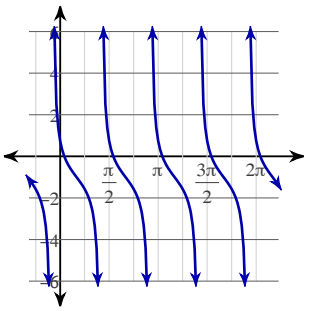
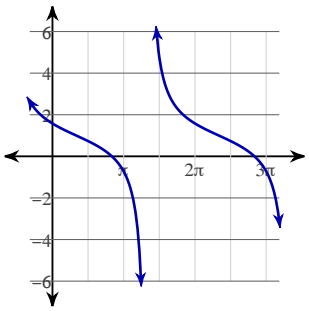
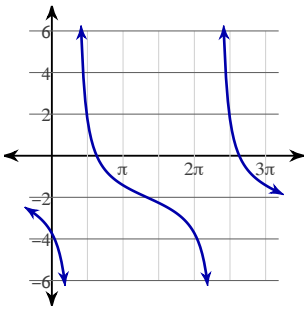
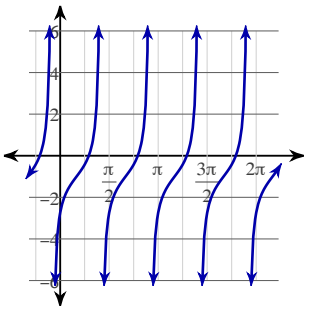


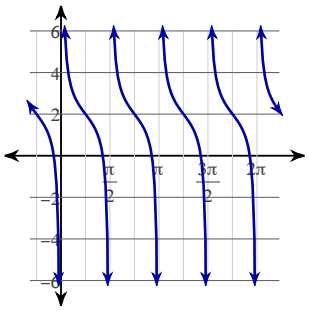
677) 

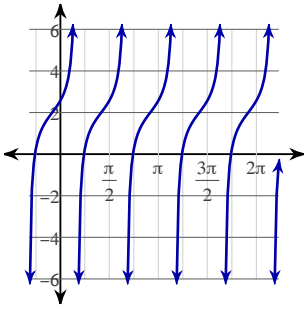
678) 

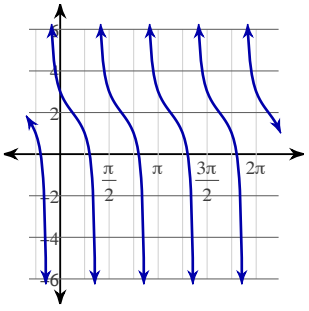
679) 

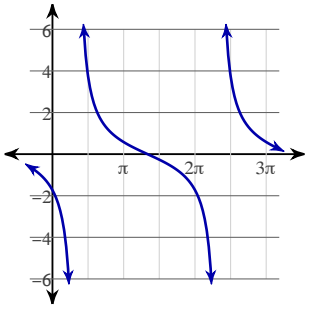
680) 

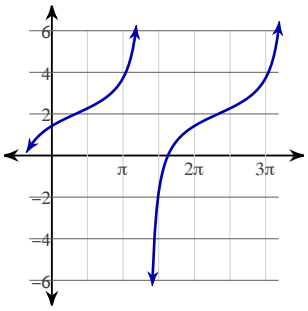
681) 

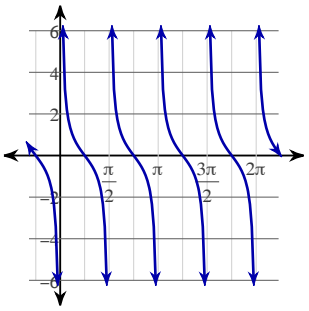
682) 

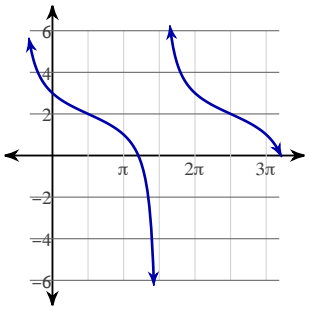
683) 

684) 

685) 

686) 

687) 

688) 

689) h(t) □ $\frac{135}{2}\cos(\frac{\pi}{15}(t-15)$ □$\frac{139}{2}$ or

h(t) □ $\frac{135}{2}\sin(\frac{\pi}{15}(t-\frac{15}{2})$ □$\frac{139}{2}$

690) h(t) □ $35\cos\frac{\pi}{90}(t-90)$ □45 or

h(t) □ $35\sin\frac{\pi}{90}(t-45)$ □45

691) D(t) □ $7\sin\frac{\pi}{12}(t-12)$ □50 or

D(t) □ $7\cos\frac{\pi}{12}(t+6)$ □50

692) D(t) □ $12\sin\frac{\pi}{12}(t-12)$ □68 or

D(t) □ $12\cos\frac{\pi}{12}(t+6)$ □68

693) a) amplitude $\frac{25}{2}$, midline $\frac{27}{2}$, period 10 min

b) $h(t)=\frac{25}{2}\cos\frac{\pi}{5}(t-5)+\frac{27}{2}$ or

$h(t)=\frac{25}{2}\sin\frac{\pi}{5}\left(t-\frac{5}{2}\right)+\frac{27}{2}$

c) 26 m

694) a) amplitude $\frac{35}{2}$, midline $\frac{41}{2}$, period 8 min

b) $h(t)=\frac{35}{2}\sin\frac{\pi}{4}(t-2)+\frac{41}{2}$ or

$h(t)=\frac{35}{2}\cos\frac{\pi}{4}(t-4)+\frac{41}{2}$

c) 38 m

695) at 2am and 10am

696) $h(x) \square 14\cos\frac{1}{14}(x - 14\pi) \square 14$ or

$h(x) = 14\sin\frac{1}{14}(x - 7\pi) + 14$

697) $D(t) = 13\cos\frac{\pi}{12}(t + 7) + 50$ or

$D(t) = 13\sin\frac{\pi}{12}(t - 11) + 50$

698) $D(t) = 7\cos\frac{\pi}{12}(t + 8) + 85$ or

$D(t) = 7\sin\frac{\pi}{12}(t - 10) + 85$

699) a) $P(t) = 25\cos\frac{\pi}{6}(t -6)+ 129$

$P(t) = 25\sin\frac{\pi}{6}(t -3)+ 129$

b) $P(t) = 25\cos\frac{\pi}{6}(t+3) + 129$

$P(t) = 25\sin\frac{\pi}{6}(t -6)+ 129$

700) a) $P(t) = 150\cos\frac{\pi}{6}(t - 6)t + 720$ or

$P(t) = 150\sin\frac{\pi}{6}(t - 3)t + 720$

b) $P(t) = 150\cos\frac{\pi}{6}(t + 4) + 720$

$P(t) = 150\sin\frac{\pi}{6}(t - 5) + 720$

701) 75

702) $70 - 7\sqrt{3}$

703) 8 AM

704) From minute 1 to minute 5 = 4 minutes

705) 5 minutes

706) $2\sin(\frac{\pi}{3}(x-\frac{1}{2}))+1$ or $2\cos(\frac{\pi}{3}(x-2))+1$

707) $7\sin(\frac{2\pi}{5}(x+\frac{7}{4}))+5$ or

$7\cos(\frac{2\pi}{5}(x+\frac{1}{2}))+5$

708) $y=2\sin(2\pi(t-\frac{1}{4}))$ or

$y=2\cos(2\pi(t-\frac{1}{2}))$

709) $2\cos\frac{\pi}{6}(t-5)+12$

710) $d=2\cos(\frac{\pi}{6}(t-4))+6$

8 AM, 12 PM

711) $d=0.9\sin\frac{\pi}{10}(t - 5) + 2.7$ or

$d=0.9\cos\frac{\pi}{10}(t - 10) + 2.7$

1.8 m

712) $h=49\cos(\frac{\pi}{15}(t-15))+50$ or

$h=49\sin(\frac{\pi}{15}(t-\frac{15}{2}))+50$

713) $3\cos(\frac{\pi}{6}(t+3))+6$ or

$3\sin(\frac{\pi}{6}(t-6))+6$

714) 3 months

715) $b(t)=0.6\cos\frac{\pi}{50}(t + 45) + 1.2$ or

$b(t)=0.6\sin\frac{\pi}{50}(t - 30) + 1.2$

716) a) $h(t)=5\cos\frac{\pi}{6}(t - 1) + 5$

$h(t)=5\sin\frac{\pi}{6}(t + 2) + 5$

b) $h(11)=7.5$

717) $p(t)=18\cos 146\pi t + 103$

718) $n=2\cos\frac{\pi}{6}(t - 5) + 12$

$n = 13$

719) $h(t)=2\cos 2\pi\left(t - \frac{1}{2}\right)$ or

$h(t)=2\sin 2\pi\left(t - \frac{1}{4}\right)$

$\frac{3}{8}$sec and $\frac{5}{8}$ sec

720) $d(t)=2\cos\frac{\pi}{6}(t - 4) + 6$

8AM and 12AM

721) $n(t)=50\cos\frac{2\pi}{11}(t-2003)+60$

722) a) $d=0.9\cos\frac{\pi}{6}(t-8)+2.7$ or

$d=0.9\cos\frac{\pi}{6}(t+4)+2.7$ or

$d=0.9\sin\frac{\pi}{6}(t-5)+2.7$

b) approximately 3.5 m

723) period $=\frac{2\pi}{3}$

frequency $=\frac{3}{2\pi}$,

maximum displacement = 8 ft

724) $y=3\cos\frac{\pi}{2}(x-2)$ or

$y=3\sin\frac{\pi}{2}(x-1)$

$\frac{2}{3}$ sec, $\frac{10}{3}$sec

$\frac{14}{3}$sec, $\frac{22}{3}$sec

725) a) 0

b) 7

c) $\frac{2}{3}$

726) $h=49\cos\frac{\pi}{15}(t-15)+50$ or

$h=49\sin\frac{\pi}{15}(t-\frac{15}{2})+50$

$\frac{25}{2}$sec, $\frac{35}{2}$sec

727) $h=3\cos\frac{\pi}{6}(t-9)+6$, or

$h=3\cos\frac{\pi}{6}(t+3)+6$, or

$h=3\sin\frac{\pi}{6}(t-6)+6$

6 feet

728) $\frac{\tan^2 x}{\cos^2 x}$ Use $\sec x=\frac{1}{\cos x}$

$\tan^2 x\sec^2 x$ Use $\cot x=\frac{1}{\tan x}$

$\frac{\sec^2 x}{\cot^2 x}$ ■

729) $\cot^2 x\tan x$ Decompose into sine and cosine

$\left(\frac{\cos x}{\sin x}\right)^2\cdot\frac{\sin x}{\cos x}$ Simplify

$\frac{\cos x}{\sin x}$ ■

730) $\cot x-1$ Decompose into sine and cosine

$\frac{\cos x}{\sin x}-1$ Simplify

$\frac{\cos x-\sin x}{\sin x}$ ■

731) $\dfrac{\cos x}{\csc^2 x \cot x}$ Decompose into sine and cosine

$\dfrac{\cos x}{\left(\dfrac{1}{\sin x}\right)^2 \cdot \dfrac{\cos x}{\sin x}}$ Simplify

$\sin^3 x$ ■

732) $-\sec x \sin x$ Use $\sec x = \dfrac{1}{\cos x}$

$-\dfrac{\sin x}{\cos x}$ Use $\tan x = \dfrac{\sin x}{\cos x}$

$-\tan x$ ■

733) $\dfrac{\sin^2 x}{\sec^2 x}$ Use $\csc x = \dfrac{1}{\sin x}$

$\dfrac{1}{\sec^2 x \csc^2 x}$ Use $\sec x = \dfrac{1}{\cos x}$

$\dfrac{\cos^2 x}{\csc^2 x}$ ■

734) $\dfrac{\cos x}{\tan x}$ Use $\sec x = \dfrac{1}{\cos x}$

$\dfrac{1}{\tan x \sec x}$ Use $\cot x = \dfrac{1}{\tan x}$

$\dfrac{\cot x}{\sec x}$ ■

735) $\dfrac{\cot x}{\cos^2 x}$ Use $\cot x = \dfrac{1}{\tan x}$

$\dfrac{1}{\cos^2 x \tan x}$ Use $\sec x = \dfrac{1}{\cos x}$

$\dfrac{\sec^2 x}{\tan x}$ ■

736) $\cot^2 x \sec^2 x$ Decompose into sine and cosine

$\left(\dfrac{\cos x}{\sin x}\right)^2 \cdot \left(\dfrac{1}{\cos x}\right)^2$ Simplify

$\dfrac{1}{\sin^2 x}$ ■

737) $\csc x + \cot^2 x$ Decompose into sine and cosine

$\dfrac{1}{\sin x} + \left(\dfrac{\cos x}{\sin x}\right)^2$ Simplify

$\dfrac{\sin x + \cos^2 x}{\sin^2 x}$ ■

738) $\dfrac{1}{\csc^2 x \cos^2 x}$ Use $\csc x = \dfrac{1}{\sin x}$

$\dfrac{\sin^2 x}{\cos^2 x}$ Use $\cot x = \dfrac{\cos x}{\sin x}$

$\dfrac{1}{\cot^2 x}$ ■

739) $\sec x \cdot \left(\sec x \cos^2 x + 1\right)$ Decompose into sine and cosine

$\dfrac{1}{\cos x}\left(\dfrac{1}{\cos x} \cdot \cos^2 x + 1\right)$ Simplify

$\dfrac{1 + \cos x}{\cos x}$ ■

740) $\dfrac{\csc x}{\tan x + \sec x}$ Decompose into sine and cosine

$\dfrac{\dfrac{1}{\sin x}}{\dfrac{\sin x}{\cos x} + \dfrac{1}{\cos x}}$ Simplify

$\dfrac{\cos x}{\sin x \cdot \left(\sin x + 1\right)}$ ■

741) $\dfrac{\sec x}{\cos x + \tan x}$ Decompose into sine and cosine

$\dfrac{\dfrac{1}{\cos x}}{\cos x + \dfrac{\sin x}{\cos x}}$ Simplify

$\dfrac{1}{\sin x + \cos^2 x}$ ■

742) $\sin x \sec^3 x$ Use $\sec x = \dfrac{1}{\cos x}$

$\dfrac{\sin x}{\cos^3 x}$ Use $\tan x = \dfrac{\sin x}{\cos x}$

$\dfrac{\tan x}{\cos^2 x}$ ■

743) $\dfrac{1}{\cot x \csc^2 x}$ Use $\cot x = \dfrac{1}{\tan x}$

$\dfrac{\tan x}{\csc^2 x}$ Use $\csc x = \dfrac{1}{\sin x}$

$\tan x \sin^2 x$ ■

744) $\csc x \cdot (1 + \csc x)$ Decompose into sine and cosine

$\frac{1}{\sin x}\left(1 + \frac{1}{\sin x}\right)$ Simplify

$\frac{\sin x + 1}{\sin^2 x}$ ■

745) $\frac{\cos^2 x}{\csc x}$ Use $\sec x = \frac{1}{\cos x}$

$\frac{1}{\sec^2 x \csc x}$ Use $\csc x = \frac{1}{\sin x}$

$\frac{\sin x}{\sec^2 x}$ ■

746) $1 + \cot x$ Decompose into sine and cosine

$1 + \frac{\cos x}{\sin x}$ Simplify

$\frac{\cos x + \sin x}{\sin x}$ ■

747) $\frac{\tan^2 x}{\sin^2 x}$ Decompose into sine and cosine

$\frac{\left(\frac{\sin x}{\cos x}\right)^2}{\sin^2 x}$ Simplify

$\frac{1}{\cos^2 x}$ ■

748) $\frac{\tan x}{\sec^2 x - 1}$ Use $\tan^2 x + 1 = \sec^2 x$

$\frac{\tan x}{\tan^2 x}$ Cancel common factors

$\frac{1}{\tan x}$ Use $\tan x = \frac{\sin x}{\cos x}$

$\frac{\cos x}{\sin x}$ ■

749) $\cos^2 x \sec x + 1$ Decompose into sine and cosine

$\cos^2 x \cdot \frac{1}{\cos x} + 1$ Simplify

$\cos x + 1$ Use $\tan^2 x + 1 = \sec^2 x$

$\cos x - \tan^2 x + \sec^2 x$ ■

750) $\dfrac{\sec x}{\tan x + \cot x}$ Decompose into sine and cosine

$\dfrac{\dfrac{1}{\cos x}}{\dfrac{\sin x}{\cos x} + \dfrac{\cos x}{\sin x}}$ Simplify

$\dfrac{\sin x}{\sin^2 x + \cos^2 x}$ Use $\sin^2 x + \cos^2 x = 1$

$\sin x$ Use $\csc x = \dfrac{1}{\sin x}$

$\dfrac{1}{\csc x}$ ■

751) $\sec^2 x + \csc^2 x$ Decompose into sine and cosine

$\left(\dfrac{1}{\cos x}\right)^2 + \left(\dfrac{1}{\sin x}\right)^2$ Simplify

$\dfrac{\sin^2 x + \cos^2 x}{\cos^2 x \sin^2 x}$ Use $\sin^2 x + \cos^2 x = 1$

$\dfrac{1}{\sin^2 x \cos^2 x}$ Use $\csc x = \dfrac{1}{\sin x}$

$\dfrac{\csc^2 x}{\cos^2 x}$ ■

752) $\dfrac{\sec^2 x + \csc^2 x}{\csc^2 x}$ Use $\cot^2 x + 1 = \csc^2 x$

$\dfrac{\sec^2 x + \csc^2 x}{\cot^2 x + 1}$ Decompose into sine and cosine

$\dfrac{\left(\dfrac{1}{\cos x}\right)^2 + \left(\dfrac{1}{\sin x}\right)^2}{\left(\dfrac{\cos x}{\sin x}\right)^2 + 1}$ Simplify

$\dfrac{1}{\cos^2 x}$ Use $\sec x = \dfrac{1}{\cos x}$

$\dfrac{\sec x}{\cos x}$ ■

753) $\cot x - \tan x \csc^2 x$ Use $\cot^2 x + 1 = \csc^2 x$

$\cot x - \tan x \cot^2 x - \tan x$ Decompose into sine and cosine

$\dfrac{\cos x}{\sin x} - \dfrac{\sin x}{\cos x} \cdot \left(\dfrac{\cos x}{\sin x}\right)^2 - \dfrac{\sin x}{\cos x}$ Simplify

$-\dfrac{\sin x}{\cos x}$ Use $\sec x = \dfrac{1}{\cos x}$

$-\sin x \sec x$ ■

754) $\dfrac{\csc^2 x - 1}{\sin^2 x}$ Use $\cot^2 x + 1 = \csc^2 x$

$\dfrac{\cot^2 x}{\sin^2 x}$ Use $\cot x = \dfrac{1}{\tan x}$

$\dfrac{1}{\tan^2 x \sin^2 x}$ Use $\csc x = \dfrac{1}{\sin x}$

$\dfrac{\csc^2 x}{\tan^2 x}$ ■

755) $\sin x \cdot \left(\tan^2 x + 1\right)$ Use $\tan^2 x + 1 = \sec^2 x$

$\sin x \sec^2 x$ Use $\sec x = \dfrac{1}{\cos x}$

$\dfrac{\sec x \sin x}{\cos x}$ Use $\cot x = \dfrac{\cos x}{\sin x}$

$\dfrac{\sec x}{\cot x}$ ■

756) $\dfrac{\tan x}{1-\sec^2 x}$ Use $\tan^2 x + 1 = \sec^2 x$

$\dfrac{\tan x}{-\tan^2 x}$ Decompose into sine and cosine

$\dfrac{\dfrac{\sin x}{\cos x}}{-\left(\dfrac{\sin x}{\cos x}\right)^2}$ Simplify

$-\dfrac{\cos x}{\sin x}$ Use $\csc x = \dfrac{1}{\sin x}$

$-\csc x \cos x$ ■

757) $\dfrac{\cot^2 x}{\cot^2 x + 1}$ Use $\cot^2 x + 1 = \csc^2 x$

$\dfrac{\cot^2 x}{\csc^2 x}$ Decompose into sine and cosine

$\dfrac{\left(\dfrac{\cos x}{\sin x}\right)^2}{\left(\dfrac{1}{\sin x}\right)^2}$ Simplify

$\cos^2 x$ ■

758) $\dfrac{\tan x}{\sin x}$ Use $\tan x = \dfrac{\sin x}{\cos x}$

$\dfrac{\sin x}{\sin x \cos x}$ Cancel common factors

$\dfrac{1}{\cos x}$ Use $\sin^2 x + \cos^2 x = 1$

$\dfrac{\cos^2 x + \sin^2 x}{\cos x}$ ■

759) $\cot x - \tan x \csc^2 x$ Use $\cot^2 x + 1 = \csc^2 x$

$\cot x - \tan x \cot^2 x - \tan x$ Decompose into sine and cosine

$\dfrac{\cos x}{\sin x} - \dfrac{\sin x}{\cos x} \cdot \left(\dfrac{\cos x}{\sin x}\right)^2 - \dfrac{\sin x}{\cos x}$ Simplify

$-\dfrac{\sin x}{\cos x}$ Use $\tan x = \dfrac{\sin x}{\cos x}$

$-\tan x$ ■

760) $\dfrac{1-\sec^2 x}{\sec^2 x}$ Use $\tan^2 x + 1 = \sec^2 x$

$-\dfrac{\tan^2 x}{\tan^2 x + 1}$ Use $\tan^2 x + 1 = \sec^2 x$

$-\dfrac{\tan^2 x}{\sec^2 x}$ Decompose into sine and cosine

$-\dfrac{\left(\dfrac{\sin x}{\cos x}\right)^2}{\left(\dfrac{1}{\cos x}\right)^2}$ Simplify

$-\sin^2 x$ ■

761) $\dfrac{\sin^2 x}{1-\sec^2 x}$ Use $\tan^2 x + 1 = \sec^2 x$

$\dfrac{\sin^2 x}{-\tan^2 x}$ Decompose into sine and cosine

$\dfrac{\sin^2 x}{-\left(\dfrac{\sin x}{\cos x}\right)^2}$ Simplify

$-\cos^2 x$ ■

762) $\tan x \sec^2 x \cot^2 x$ Use $\cot x = \dfrac{1}{\tan x}$

$\dfrac{\tan x \sec^2 x}{\tan^2 x}$ Cancel common factors

$\dfrac{\sec^2 x}{\tan x}$ Use $\tan^2 x + 1 = \sec^2 x$

$\dfrac{\tan^2 x + 1}{\tan x}$ ■

763) $\csc x \sin^2 x$ Use $\csc x = \dfrac{1}{\sin x}$

$\dfrac{\csc x}{\csc^2 x}$ Cancel common factors

$\dfrac{1}{\csc x}$ Use $\tan^2 x + 1 = \sec^2 x$

$\dfrac{\sec^2 x - \tan^2 x}{\csc x}$ ■

764) $\csc^2 x \sin x$ Decompose into sine and cosine

$\left(\dfrac{1}{\sin x}\right)^2 \sin x$ Simplify

$\dfrac{1}{\sin x}$ Use $\tan^2 x + 1 = \sec^2 x$

$\dfrac{\sec^2 x - \tan^2 x}{\sin x}$ ■

765) $\dfrac{1}{\csc^2 x + \sec^2 x}$ Decompose into sine and cosine

$\dfrac{1}{\left(\dfrac{1}{\sin x}\right)^2 + \left(\dfrac{1}{\cos x}\right)^2}$ Simplify

$\dfrac{\sin^2 x \cos^2 x}{\cos^2 x + \sin^2 x}$ Use $\sin^2 x + \cos^2 x = 1$

$\sin^2 x \cos^2 x$ Use $\csc x = \dfrac{1}{\sin x}$

$\dfrac{\cos^2 x}{\csc^2 x}$ ■

766) $\sec^2 x \cot^2 x$ Decompose into sine and cosine

$\left(\dfrac{1}{\cos x}\right)^2 \cdot \left(\dfrac{\cos x}{\sin x}\right)^2$ Simplify

$\dfrac{1}{\sin^2 x}$ Use $\csc x = \dfrac{1}{\sin x}$

$\csc^2 x$ Use $\cot^2 x + 1 = \csc^2 x$

$1 + \cot^2 x$ ■

767) $\dfrac{\sec x}{\tan x}$ Decompose into sine and cosine

$\dfrac{\dfrac{1}{\cos x}}{\dfrac{\sin x}{\cos x}}$ Simplify

$\dfrac{1}{\sin x}$ Use $\tan^2 x + 1 = \sec^2 x$

$\dfrac{\sec^2 x - \tan^2 x}{\sin x}$ ■

768) $\cos(\theta - \pi)$
$= \cos\theta\cos\pi + \sin\theta\sin\pi$
$= \cos\theta \cdot -1 + \sin\theta \cdot 0$
$= -\cos\theta$

769) $\cos\left(\dfrac{\pi}{2} - \theta\right)$
$= \cos\dfrac{\pi}{2}\cos\theta + \sin\dfrac{\pi}{2}\sin\theta$
$= 0\cos\theta + \sin\theta$
$= \sin\theta$

770) $\tan\left(\frac{3\pi}{4} - \theta\right)$

$= \frac{\tan\frac{3\pi}{4} - \tan\theta}{1 + \tan\frac{3\pi}{4}\tan\theta}$

$= \frac{-1 - \tan\theta}{1 - \tan\theta}$

$= \frac{-1 - \tan\theta}{1 - \tan\theta}$

771) $\tan(\pi - \theta)$

$= \frac{\tan\pi - \tan\theta}{1 + \tan\pi\tan\theta}$

$= \frac{0 - \tan\theta}{1 + 0\tan\theta}$

$= -\tan\theta$

772) $\tan\left(\frac{\pi}{4} - \theta\right)$

$= \frac{\tan\frac{\pi}{4} - \tan\theta}{1 + \tan\frac{\pi}{4}\tan\theta}$

$= \frac{1 - \tan\theta}{1 + \tan\theta}$

$= \frac{1 - \tan\theta}{1 + \tan\theta}$

773) $\sin\left(\theta + \frac{\pi}{2}\right)$

$= \sin\theta\cos\frac{\pi}{2} + \cos\theta\sin\frac{\pi}{2}$

$= \sin\theta \cdot 0 + \cos\theta \cdot 1$

$= \cos\theta$

774) $\sin\left(\frac{3\pi}{2} - \theta\right)$

$= \sin\frac{3\pi}{2}\cos\theta - \cos\frac{3\pi}{2}\sin\theta$

$= -\cos\theta - 0\sin\theta$

$= -\cos\theta$

775) $\cos(\pi + \theta)$

$= \cos\pi\cos\theta - \sin\pi\sin\theta$

$= -\cos\theta - 0\sin\theta$

$= -\cos\theta$

776) $\sin\left(\frac{\pi}{2} - \theta\right)$

$= \sin\frac{\pi}{2}\cos\theta - \cos\frac{\pi}{2}\sin\theta$

$= \cos\theta - 0\sin\theta$

$= \cos\theta$

777) $\sin\left(\frac{3\pi}{2} + \theta\right)$

$= \sin\frac{3\pi}{2}\cos\theta + \cos\frac{3\pi}{2}\sin\theta$

$= -\cos\theta + 0\sin\theta$

$= -\cos\theta$

778) $\sin(\theta - \pi)$

$= \sin\theta\cos\pi - \cos\theta\sin\pi$

$= \sin\theta \cdot -1 - \cos\theta \cdot 0$

$= -\sin\theta$

779) $\cos\left(\theta + \frac{3\pi}{2}\right)$

$= \cos\theta\cos\frac{3\pi}{2} - \sin\theta\sin\frac{3\pi}{2}$

$= \cos\theta \cdot 0 - \sin\theta \cdot -1$

$= \sin\theta$

780) $\sin(\pi + \theta)$

$= \sin\pi\cos\theta + \cos\pi\sin\theta$

$= 0\cos\theta - \sin\theta$

$= -\sin\theta$

781) $\tan\left(\theta + \frac{3\pi}{4}\right)$

$= \frac{\tan\theta + \tan\frac{3\pi}{4}}{1 - \tan\theta\tan\frac{3\pi}{4}}$

$= \frac{\tan\theta - 1}{1 - \tan\theta \cdot -1}$

$= \frac{\tan\theta - 1}{1 + \tan\theta}$

782) $\cos\left(\theta - \frac{3\pi}{2}\right)$

$= \cos\theta\cos\frac{3\pi}{2} + \sin\theta\sin\frac{3\pi}{2}$

$= \cos\theta \cdot 0 + \sin\theta \cdot -1$

$= -\sin\theta$

783) $\tan(\pi + \theta)$

$= \frac{\tan\pi + \tan\theta}{1 - \tan\pi\tan\theta}$

$= \frac{0 + \tan\theta}{1 - 0\tan\theta}$

$= \tan\theta$

784) $\tan\left(\theta + \frac{\pi}{4}\right)$

$= \frac{\tan\theta + \tan\frac{\pi}{4}}{1 - \tan\theta\tan\frac{\pi}{4}}$

$= \frac{\tan\theta + 1}{1 - \tan\theta \cdot 1}$

$= \frac{\tan\theta + 1}{1 - \tan\theta}$

785) $\cos\left(\frac{\pi}{2} + \theta\right)$

$= \cos\frac{\pi}{2}\cos\theta - \sin\frac{\pi}{2}\sin\theta$

$= 0\cos\theta - \sin\theta$

$= -\sin\theta$

786) $\tan\left(\theta - \frac{3\pi}{4}\right)$

$= \frac{\tan\theta - \tan\frac{3\pi}{4}}{1 + \tan\theta\tan\frac{3\pi}{4}}$

$= \frac{\tan\theta - -1}{1 + \tan\theta \cdot -1}$

$= \frac{\tan\theta + 1}{1 - \tan\theta}$

787) $\sin(\pi - \theta)$

$= \sin\pi\cos\theta - \cos\pi\sin\theta$

$= 0\cos\theta - -\sin\theta$

$= \sin\theta$

788) $\dfrac{\sin x}{1-\cos 2x}$ Use $\cos 2x = 1 - 2\sin^2 x$

$\dfrac{\sin x}{2\sin^2 x}$ Cancel common factors

$\dfrac{1}{2\sin x}$ ■

789) $\cot^2 x + 2\sin^2 x$ Use $\cot^2 x + 1 = \csc^2 x$

$-1 + 2\sin^2 x + \csc^2 x$ Use $\cos 2x = 1 - 2\sin^2 x$

$-\cos 2x + \csc^2 x$ ■

790) $\dfrac{2\cos^2 x}{1-\cos 2x}$ Use $\sin^2 x = \dfrac{1-\cos 2x}{2}$

$\dfrac{\cos^2 x}{\sin^2 x}$ Use $\tan x = \dfrac{\sin x}{\cos x}$

$\dfrac{1}{\tan^2 x}$ ■

791) $\sin^2 x + \csc^2 x - 1 + \cos 2x$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\csc^2 x - 1 + \cos^2 x$ Use $\cot^2 x + 1 = \csc^2 x$

$\cot^2 x + \cos^2 x$ ■

792) $\dfrac{2}{1-\cos 2x}$ Use $\sin^2 x = \dfrac{1-\cos 2x}{2}$

$\dfrac{1}{\sin^2 x}$ Use $\csc x = \dfrac{1}{\sin x}$

$\csc^2 x$ ■

793) $\sin 2x \cdot (1 - \cos 2x)$ Use $\sin 2x = 2\sin x \cos x$

$2\sin x \cos x \cdot (1 - \cos 2x)$ Use $\cos 2x = 1 - 2\sin^2 x$

$4\sin^3 x \cos x$ ■

794) $2\cos^2 x \csc^2 x$ Use $\csc x = \frac{1}{\sin x}$

$\frac{2\cos^2 x}{\sin^2 x}$ Use $\cos 2x = 2\cos^2 x - 1$

$\frac{1 + \cos 2x}{\sin^2 x}$ ■

795) $2\sin^2 x + \cos 2x + \sec^2 x$ Use $\cos 2x = 1 - 2\sin^2 x$

$1 + \sec^2 x$ Use $\tan^2 x + 1 = \sec^2 x$

$2 + \tan^2 x$ ■

796) $\frac{\sin 2x}{\cos x}$ Use $\sin 2x = 2\sin x \cos x$

$\frac{2\sin x \cos x}{\cos x}$ Cancel common factors

$2\sin x$ ■

797) $\frac{\sin 2x}{\sin 2x + \sin x}$ Use $\sin 2x = 2\sin x \cos x$

$\frac{2\sin x \cos x}{\sin x \cdot (2\cos x + 1)}$ Cancel common factors

$\frac{2\cos x}{2\cos x + 1}$ ■

798) $2\sin^2 x \cos x$ Use $\sin 2x = 2\sin x \cos x$

$\sin x \sin 2x$ Use $\csc x = \frac{1}{\sin x}$

$\frac{\sin 2x}{\csc x}$ ■

799) $\sin x \cdot (1 + \cos 2x)$ Use $\cos 2x = 2\cos^2 x - 1$

$2\sin x \cos^2 x$ Use $\sin 2x = 2\sin x \cos x$

$\cos x \sin 2x$ ■

800) $2\cos^2 x(1 - \cos 2x)$ Use $\cos 2x = 1 - 2\sin^2 x$

$4\cos^2 x \sin^2 x$ Use $\sin 2x = 2\sin x \cos x$

$\sin^2 2x$ ■

801) $\frac{1 - \cos 2x}{\cos^2 x}$ Use $\cos^2 x = \frac{1 + \cos 2x}{2}$

$\frac{2(1 - \cos 2x)}{1 + \cos 2x}$ Use $\tan^2 x = \frac{1 - \cos 2x}{1 + \cos 2x}$

$2\tan^2 x$ ■

802) $\frac{1}{\sec^2 x}$ Use $\sec x = \frac{1}{\cos x}$

$\cos^2 x$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\sin^2 x + \cos 2x$ ■

803) $\frac{2\sin^2 x}{1 + \cos 2x}$ Use $\cos^2 x = \frac{1 + \cos 2x}{2}$

$\frac{\sin^2 x}{\cos^2 x}$ Use $\tan x = \frac{\sin x}{\cos x}$

$\tan^2 x$ ■

804) $\dfrac{2\cos^2 x}{\csc^2 x}$ Use $\csc x = \dfrac{1}{\sin x}$

$2\sin^2 x\cos^2 x$ Use $\cos 2x = 2\cos^2 x - 1$

$\sin^2 x(1 + \cos 2x)$ ■

805) $1 + \cos 2x - 2\sin x\cos x$ Use $\cos 2x = 2\cos^2 x - 1$

$2\cos x \cdot (\cos x - \sin x)$ Use $\sin 2x = 2\sin x\cos x$

$2\cos^2 x - \sin 2x$ ■

806) $\dfrac{2\sin x\cos x}{\cos 2x}$ Use $\sin 2x = 2\sin x\cos x$

$\dfrac{\sin 2x}{\cos 2x}$ Use $\tan 2x = \dfrac{\sin 2x}{\cos 2x}$

$\tan 2x$ ■

807) $2\cos^2 x + \tan^2 x$ Use $\tan^2 x + 1 = \sec^2 x$

$\sec^2 x + 2\cos^2 x - 1$ Use $\cos 2x = 2\cos^2 x - 1$

$\sec^2 x + \cos 2x$ ■

808) $\dfrac{\tan^2 x}{\sin^2 x + \cos^2 x}$ Use $\sin^2 x + \cos^2 x = 1$

$\tan^2 x$ Use $\tan x = \dfrac{\sin x}{\cos x}$

$\dfrac{\sin^2 x}{\cos^2 x}$ Use $\cos^2 x = \dfrac{1 + \cos 2x}{2}$

$\dfrac{2\sin^2 x}{1 + \cos 2x}$ ■

809) $\dfrac{\tan x}{2\sin^2 x}$ Use $\tan x = \dfrac{\sin x}{\cos x}$

$\dfrac{\sin x}{2\sin^2 x\cos x}$ Cancel common factors

$\dfrac{1}{2\cos x\sin x}$ Use $\sin 2x = 2\sin x\cos x$

$\dfrac{1}{\sin 2x}$ ■

810) $\cos x \cdot (2\sin x - \cos x\sec x)$ Decompose into sine and cosine

$\cos x \cdot \left(2\sin x - \cos x \cdot \dfrac{1}{\cos x}\right)$ Simplify

$\cos x \cdot (2\sin x - 1)$ Use $\sin 2x = 2\sin x\cos x$

$\sin 2x - \cos x$ ■

811) $\dfrac{\cos^2 x}{\sin 2x}$ Use $\sin 2x = 2\sin x\cos x$

$\dfrac{\cos^2 x}{2\sin x\cos x}$ Cancel common factors

$\dfrac{\cos x}{2\sin x}$ Use $\cot x = \dfrac{\cos x}{\sin x}$

$\dfrac{\cot x}{2}$ ■

812) $\cos^2 x\left(1 - \tan^2 x\right)$ Decompose into sine and cosine

$\cos^2 x\left(1 - \left(\dfrac{\sin x}{\cos x}\right)^2\right)$ Simplify

$\cos^2 x - \sin^2 x$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\cos 2x$ ■

813) $\dfrac{1 - \cos 2x}{2\cos^3 x}$ Use $\sin^2 x = \dfrac{1 - \cos 2x}{2}$

$\dfrac{\sin^2 x}{\cos^3 x}$ Use $\tan x = \dfrac{\sin x}{\cos x}$

$\dfrac{\tan^2 x}{\cos x}$ Use $\sec x = \dfrac{1}{\cos x}$

$\sec x\tan^2 x$ ■

814) $\cos x \cdot \left(2\sin x - \tan x\right)$ Decompose into sine and cosine

$\cos x \cdot \left(2\sin x - \dfrac{\sin x}{\cos x}\right)$ Simplify

$\sin x \cdot \left(2\cos x - 1\right)$ Use $\sin 2x = 2\sin x\cos x$

$\sin 2x - \sin x$ ■

815) $\dfrac{2\sin^2 x}{\sec x}$ Use $\sec x = \dfrac{1}{\cos x}$

$2\sin^2 x\cos x$ Use $\sin 2x = 2\sin x\cos x$

$\sin 2x\sin x$ Use $\csc x = \dfrac{1}{\sin x}$

$\dfrac{\sin 2x}{\csc x}$ ■

816) $\dfrac{2}{1-\tan^2 x}$ Decompose into sine and cosine

$\dfrac{2}{1-\left(\dfrac{\sin x}{\cos x}\right)^2}$ Simplify

$\dfrac{2\cos^2 x}{\cos^2 x-\sin^2 x}$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\dfrac{2\cos^2 x}{\cos 2x}$ ■

817) $\dfrac{\tan^2 x}{1-\tan^2 x}$ Decompose into sine and cosine

$\dfrac{\left(\dfrac{\sin x}{\cos x}\right)^2}{1-\left(\dfrac{\sin x}{\cos x}\right)^2}$ Simplify

$\dfrac{\sin^2 x}{\cos^2 x-\sin^2 x}$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\dfrac{\sin^2 x}{\cos 2x}$ ■

818) $\dfrac{\sin 2x}{\sin^2 x}$ Use $\sin 2x = 2\sin x\cos x$

$\dfrac{2\sin x\cos x}{\sin^2 x}$ Cancel common factors

$\dfrac{2\cos x}{\sin x}$ Use $\tan x = \dfrac{\sin x}{\cos x}$

$\dfrac{2}{\tan x}$ ■

819) $\dfrac{\csc^2 x(1 + \cos 2x)}{\cos^2 x}$ Use $\cos^2 x = \dfrac{1 + \cos 2x}{2}$

$\dfrac{2\csc^2 x(1 + \cos 2x)}{1 + \cos 2x}$ Cancel common factors

$2\csc^2 x$ Use $\csc x = \dfrac{1}{\sin x}$

$\dfrac{2}{\sin^2 x}$ ■

820) $\dfrac{\sec^2 x}{1 - \tan^2 x}$ Decompose into sine and cosine

$\dfrac{\left(\dfrac{1}{\cos x}\right)^2}{1 - \left(\dfrac{\sin x}{\cos x}\right)^2}$ Simplify

$\dfrac{1}{\cos^2 x - \sin^2 x}$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\dfrac{1}{\cos 2x}$ ■

821) $\dfrac{\sin 4x}{\cos 2x}$ Use $\sin 4x = 2\sin 2x\cos 2x$

$\dfrac{2\sin 2x\cos 2x}{\cos 2x}$ Cancel common factors

$2\sin 2x$ Use $\sin 2x = 2\sin x\cos x$

$4\sin x\cos x$ ■

822) $\dfrac{\sin^2 x}{\sin 2x}$ Use $\sin 2x = 2\sin x\cos x$

$\dfrac{\sin^2 x}{2\sin x\cos x}$ Cancel common factors

$\dfrac{\sin x}{2\cos x}$ Use $\tan x = \dfrac{\sin x}{\cos x}$

$\dfrac{\tan x}{2}$ ■

823) $\cos 4x\tan 4x$ Use $\tan 4x = \dfrac{\sin 4x}{\cos 4x}$

$\dfrac{\cos 4x\sin 4x}{\cos 4x}$ Cancel common factors

$\sin 4x$ Use $\cos 2x = 1 - 2\sin^2 x$

$\dfrac{\sin 4x}{2\sin^2 x + \cos 2x}$ ■

824) $\dfrac{\sin x}{\tan 2x}$ Use $\tan 2x = \dfrac{\sin 2x}{\cos 2x}$

$\dfrac{\sin x \cos 2x}{\sin 2x}$ Use $\sin 2x = 2\sin x \cos x$

$\dfrac{\sin x \cos 2x}{2\sin x \cos x}$ Cancel common factors

$\dfrac{\cos 2x}{2\cos x}$ ■

825) $\dfrac{1 - \tan^2 x}{2}$ Decompose into sine and cosine

$\dfrac{1 - \left(\dfrac{\sin x}{\cos x}\right)^2}{2}$ Simplify

$\dfrac{\cos^2 x - \sin^2 x}{2\cos^2 x}$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\dfrac{\cos 2x}{2\cos^2 x}$ ■

826) $\dfrac{\tan^2 x}{1 - \cos 2x}$ Use $\tan^2 x = \dfrac{1 - \cos 2x}{1 + \cos 2x}$

$\dfrac{1 - \cos 2x}{(1 - \cos 2x)(1 + \cos 2x)}$ Use $\cos 2x = 2\cos^2 x - 1$

$\dfrac{2(1 - \cos^2 x)}{4\cos^2 x(1 - \cos^2 x)}$ Cancel common factors

$\dfrac{1}{2\cos^2 x}$ ■

827) $\dfrac{\sin 2x}{\sin^2 x}$ Use $\sin 2x = 2\sin x \cos x$

$\dfrac{2\sin x \cos x}{\sin^2 x}$ Cancel common factors

$\dfrac{2\cos x}{\sin x}$ Use $\csc x = \dfrac{1}{\sin x}$

$2\cos x \csc x$ ■

828) $1 - \cos 2x - \tan^2 x$ Use $\cos 2x = 1 - 2\sin^2 x$

$2\sin^2 x - \tan^2 x$ Decompose into sine and cosine

$2\sin^2 x - \left(\frac{\sin x}{\cos x}\right)^2$ Simplify

$\frac{\sin^2 x(2\cos^2 x - 1)}{\cos^2 x}$ Use $\cos 2x = 2\cos^2 x - 1$

$\frac{\sin^2 x \cos 2x}{\cos^2 x}$ Use $\tan x = \frac{\sin x}{\cos x}$

$\tan^2 x \cos 2x$ ■

829) $\frac{\tan x \cdot (1 - \cos 2x)}{\sec^2 x}$ Use $\cos 2x = 1 - 2\sin^2 x$

$\frac{2\tan x \sin^2 x}{\sec^2 x}$ Decompose into sine and cosine

$\frac{2 \cdot \frac{\sin x}{\cos x} \cdot \sin^2 x}{\left(\frac{1}{\cos x}\right)^2}$ Simplify

$2\sin^3 x \cos x$ Use $\sin 2x = 2\sin x \cos x$

$\sin^2 x \sin 2x$ ■

830) $\tan x \cdot (1 + \cos 2x)$ Use $\cos 2x = 2\cos^2 x - 1$

$2\tan x \cos^2 x$ Use $\tan x = \frac{\sin x}{\cos x}$

$\frac{2\sin x \cos^2 x}{\cos x}$ Cancel common factors

$2\sin x \cos x$ Use $\sin 2x = 2\sin x \cos x$

$\sin 2x$ ■

831) $\frac{1 - \cos 2x}{\sin x}$ Use $\cos 2x = 1 - 2\sin^2 x$

$\frac{2\sin^2 x}{\sin x}$ Cancel common factors

$2\sin x$ Create a common factor

$\frac{2\sin x \cos x}{\cos x}$ Use $\sec x = \frac{1}{\cos x}$

$2\sin x \cos x \sec x$ ■

832) $\sin^2 x - \tan x \sin 2x$ Use $\sin 2x = 2\sin x \cos x$

$\sin x \cdot (\sin x - 2\tan x \cos x)$ Decompose into sine and cosine

$\sin x \cdot \left(\sin x - 2 \cdot \dfrac{\sin x}{\cos x} \cdot \cos x\right)$ Simplify

$-\sin^2 x$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\cos 2x - \cos^2 x$ ■

833) $\dfrac{\sin 2x}{\tan^2 x}$ Use $\sin 2x = 2\sin x \cos x$

$\dfrac{2\sin x \cos x}{\tan^2 x}$ Use $\tan x = \dfrac{\sin x}{\cos x}$

$\dfrac{2\cos^3 x \sin x}{\sin^2 x}$ Cancel common factors

$\dfrac{2\cos^3 x}{\sin x}$ Use $\cot x = \dfrac{\cos x}{\sin x}$

$2\cos^2 x \cot x$ ■

834) $\dfrac{\sin 2x + \tan 2x}{2\cos^2 x}$ Use $\cos 2x = 2\cos^2 x - 1$

$\dfrac{\sin 2x + \tan 2x}{1 + \cos 2x}$ Decompose into sine and cosine

$\dfrac{\sin 2x + \dfrac{\sin 2x}{\cos 2x}}{1 + \cos 2x}$ Simplify

$\dfrac{\sin 2x}{\cos 2x}$ Use $\tan 2x = \dfrac{\sin 2x}{\cos 2x}$

$\tan 2x$ ■

835) $2\sin^2 x - \tan^2 x$ Decompose into sine and cosine

$2\sin^2 x - \left(\frac{\sin x}{\cos x}\right)^2$ Simplify

$\frac{\sin^2 x\left(2\cos^2 x - 1\right)}{\cos^2 x}$ Use $\cos 2x = 2\cos^2 x - 1$

$\frac{\sin^2 x\cos 2x}{\cos^2 x}$ Use $\tan x = \frac{\sin x}{\cos x}$

$\tan^2 x\cos 2x$ ■

836) $\frac{\sin 2x}{2\tan^2 x\cos^2 x}$ Use $\sin 2x = 2\sin x\cos x$

$\frac{2\sin x\cos x}{2\tan^2 x\cos^2 x}$ Decompose into sine and cosine

$\frac{2\sin x\cos x}{2 \cdot \left(\frac{\sin x}{\cos x}\right)^2 \cdot \cos^2 x}$ Simplify

$\frac{\cos x}{\sin x}$ Use $\sec x = \frac{1}{\cos x}$

$\frac{1}{\sin x\sec x}$ ■

837) $\cot x + \sin 2x$ Use $\sin 2x = 2\sin x\cos x$

$\cot x + 2\sin x\cos x$ Decompose into sine and cosine

$\frac{\cos x}{\sin x} + 2\sin x\cos x$ Simplify

$\frac{\cos x \cdot \left(1 + 2\sin^2 x\right)}{\sin x}$ Use $\tan x = \frac{\sin x}{\cos x}$

$\frac{1 + 2\sin^2 x}{\tan x}$ ■

838) $\csc^2 x - 2$ Decompose into sine and cosine

$\left(\frac{1}{\sin x}\right)^2 - 2$ Simplify

$\frac{-2\sin^2 x + 1}{\sin^2 x}$ Use $\cos 2x = 1 - 2\sin^2 x$

$\frac{\cos 2x}{\sin^2 x}$ Use $\csc x = \frac{1}{\sin x}$

$\cos 2x \csc^2 x$ ■

839) $\frac{\cot x}{\csc^2 x(1 + \cos 2x)}$ Use $\cos 2x = 2\cos^2 x - 1$

$\frac{\cot x}{2\csc^2 x \cos^2 x}$ Use $\cot x = \frac{\cos x}{\sin x}$

$\frac{\cos x}{2\csc^2 x \sin x \cos^2 x}$ Cancel common factors

$\frac{1}{2\csc^2 x \sin x \cos x}$ Use $\sin 2x = 2\sin x \cos x$

$\frac{1}{\sin 2x \csc^2 x}$ Use $\csc x = \frac{1}{\sin x}$

$\frac{\sin^2 x}{\sin 2x}$ ■

840) $\frac{1 - \tan^2 x}{\sin 2x}$ Decompose into sine and cosine

$\frac{1 - \left(\frac{\sin x}{\cos x}\right)^2}{\sin 2x}$ Simplify

$\frac{\cos^2 x - \sin^2 x}{\cos^2 x \sin 2x}$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\frac{\cos 2x}{\cos^2 x \sin 2x}$ Use $\sec x = \frac{1}{\cos x}$

$\frac{\sec^2 x \cos 2x}{\sin 2x}$ Use $\tan 2x = \frac{\sin 2x}{\cos 2x}$

$\frac{\sec^2 x}{\tan 2x}$ ■

841) $\tan 2x \sin 4x$ Use $\sin 4x = 2\sin 2x \cos 2x$

$2\tan 2x \sin 2x \cos 2x$ Use $\tan 2x = \frac{\sin 2x}{\cos 2x}$

$\frac{2\sin^2 2x \cos 2x}{\cos 2x}$ Cancel common factors

$2\sin^2 2x$ Use $\cos 4x = 1 - 2\sin^2 2x$

$1 - \cos 4x$ ■

842) $\sin 2x - \tan x$ Use $\sin 2x = 2\sin x \cos x$

$2\sin x \cos x - \tan x$ Decompose into sine and cosine

$2\sin x \cos x - \frac{\sin x}{\cos x}$ Simplify

$\frac{\sin x \cdot \left(2\cos^2 x - 1\right)}{\cos x}$ Use $\cos 2x = 2\cos^2 x - 1$

$\frac{\cos 2x \sin x}{\cos x}$ Use $\tan x = \frac{\sin x}{\cos x}$

$\tan x \cos 2x$ ■

843) $\frac{2\sin x \cos x}{\tan 2x}$ Use $\sin 2x = 2\sin x \cos x$

$\frac{\sin 2x}{\tan 2x}$ Use $\tan 2x = \frac{\sin 2x}{\cos 2x}$

$\frac{\cos 2x \sin 2x}{\sin 2x}$ Cancel common factors

$\cos 2x$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\cos^2 x - \sin^2 x$ ■

844) $\cos^2 x\left(1 - \tan^2 x\right)$ Decompose into sine and cosine

$\cos^2 x\left(1 - \left(\frac{\sin x}{\cos x}\right)^2\right)$ Simplify

$\cos^2 x - \sin^2 x$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\cos 2x$ Create a common factor

$\frac{\cos 2x \csc x}{\csc x}$ Use $\csc x = \frac{1}{\sin x}$

$\frac{\cos 2x}{\csc x \sin x}$ ■

845) $\sin^2 x\left(1 - \tan^2 x\right)$ Decompose into sine and cosine

$\sin^2 x\left(1 - \left(\frac{\sin x}{\cos x}\right)^2\right)$ Simplify

$\frac{\sin^2 x\left(\cos^2 x - \sin^2 x\right)}{\cos^2 x}$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\frac{\sin^2 x \cos 2x}{\cos^2 x}$ Use $\tan x = \frac{\sin x}{\cos x}$

$\tan^2 x \cos 2x$ ■

846) $1 - \tan^2 x$ Decompose into sine and cosine

$1 - \left(\frac{\sin x}{\cos x}\right)^2$ Simplify

$\frac{\cos^2 x - \sin^2 x}{\cos^2 x}$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\frac{\cos 2x}{\cos^2 x}$ Use $\sec x = \frac{1}{\cos x}$

$\cos 2x \sec^2 x$ ■

847) $\dfrac{\csc^2 x}{1-\tan^2 x}$ Decompose into sine and cosine

$\dfrac{\left(\dfrac{1}{\sin x}\right)^2}{1-\left(\dfrac{\sin x}{\cos x}\right)^2}$ Simplify

$\dfrac{\cos^2 x}{\sin^2 x\left(\cos^2 x-\sin^2 x\right)}$ Use $\cos 2x = \cos^2 x - \sin^2 x$

$\dfrac{\cos^2 x}{\sin^2 x \cos 2x}$ Use $\cot x = \dfrac{\cos x}{\sin x}$

$\dfrac{\cot^2 x}{\cos 2x}$ ■

848) $-\dfrac{\sqrt{2}}{2}$

849) $\dfrac{1}{2}$

850) $\dfrac{1}{2}$

851) $\dfrac{\sqrt{3}}{2}$

852) $-\dfrac{1}{2}$

853) $-\dfrac{1}{2}$

854) 1

855) $\dfrac{\sqrt{3}}{2}$

856) 0

857) $\dfrac{1}{2}$

858) 0

859) $-\dfrac{\sqrt{3}}{2}$

860) $-\dfrac{1}{2}$

861) $\dfrac{\sqrt{2}}{2}$

862) $\dfrac{\sqrt{2}}{2}$

863) $-\dfrac{\sqrt{3}}{2}$

864) $\dfrac{1}{2}$

865) $\dfrac{\sqrt{2}}{2}$

866) $-\dfrac{1}{2}$

867) $\dfrac{\sqrt{2}}{2}$

868) $\dfrac{\sqrt{6}-\sqrt{2}}{4}$

869) $\dfrac{\sqrt{2}-\sqrt{6}}{4}$

870) $\dfrac{\sqrt{6}+\sqrt{2}}{4}$

871) $\dfrac{-\sqrt{6}-\sqrt{2}}{4}$

872) $\dfrac{\sqrt{6}+\sqrt{2}}{4}$

873) $\dfrac{\sqrt{6}-\sqrt{2}}{4}$

874) $\dfrac{-\sqrt{6}-\sqrt{2}}{4}$

875) $\dfrac{-\sqrt{6}-\sqrt{2}}{4}$

876) $\dfrac{\sqrt{6}+\sqrt{2}}{4}$

877) $\dfrac{\sqrt{6}+\sqrt{2}}{4}$

878) $\dfrac{\sqrt{2}-\sqrt{6}}{4}$

879) $\dfrac{-\sqrt{6}-\sqrt{2}}{4}$

880) $\dfrac{\sqrt{2}-\sqrt{6}}{4}$

881) $\dfrac{\sqrt{2}-\sqrt{6}}{4}$

882) $\dfrac{\sqrt{6}+\sqrt{2}}{4}$

883) $\dfrac{\sqrt{6}+\sqrt{2}}{4}$

884) $\dfrac{\sqrt{2}-\sqrt{6}}{4}$

885) $\dfrac{\sqrt{2}-\sqrt{6}}{4}$

886) $\dfrac{\sqrt{6}-\sqrt{2}}{4}$

887) $\dfrac{\sqrt{6}-\sqrt{2}}{4}$

888) $-2-\sqrt{3}$

889) $2+\sqrt{3}$

890) $2-\sqrt{3}$

891) $2+\sqrt{3}$

892) $2+\sqrt{3}$

893) $\sqrt{3}-2$

894) $\sqrt{3}-2$

895) $-2-\sqrt{3}$

896) $-2-\sqrt{3}$

897) $2+\sqrt{3}$

898) $\dfrac{\sqrt{2+\sqrt{3}}}{2}$

899) $1-\sqrt{2}$

900) $-\dfrac{\sqrt{2-\sqrt{3}}}{2}$

901) $\sqrt{2}-1$

902) $-\dfrac{\sqrt{2+\sqrt{3}}}{2}$

903) $\dfrac{\sqrt{2+\sqrt{3}}}{2}$

904) $-\frac{\sqrt{2+\sqrt{2}}}{2}$

905) $\sqrt{3}-2$

906) $-\frac{\sqrt{2-\sqrt{2}}}{2}$

907) $\frac{\sqrt{2-\sqrt{2}}}{2}$

908) $-\frac{\sqrt{2-\sqrt{3}}}{2}$

909) $\frac{\sqrt{2+\sqrt{2}}}{2}$

910) $\frac{\sqrt{2-\sqrt{3}}}{2}$

911) $-2-\sqrt{3}$

912) $1+\sqrt{2}$

913) $\frac{\sqrt{2-\sqrt{2}}}{2}$

914) $\frac{\sqrt{2+\sqrt{2}}}{2}$

915) $-2-\sqrt{3}$

916) $\frac{\sqrt{2+\sqrt{3}}}{2}$

917) $-\frac{\sqrt{2+\sqrt{2}}}{2}$

918) $-\frac{5\sqrt{34}}{34}$

919) $-\frac{24}{25}$

920) $\frac{3\sqrt{34}}{34}$

921) $\frac{\sqrt{5}}{5}$

922) $-\frac{2\sqrt{13}}{13}$

923) $-\frac{\sqrt{5}}{5}$

924) $-\frac{7}{25}$

925) $\frac{\sqrt{338-65\sqrt{26}}}{26}$

926) $\frac{5\sqrt{34}}{34}$

927) $\frac{5\sqrt{34}}{34}$

928) $\frac{120}{169}$

929) $\frac{8\sqrt{14}}{223}$

930) $\frac{240}{161}$

931) $-\frac{4\sqrt{2}}{7}$

932) $-\frac{24}{7}$

933) $\frac{\sqrt{50+20\sqrt{5}}}{10}$

934) $-\frac{240}{161}$

935) $-\frac{7}{25}$

936) $-\frac{120}{169}$

937) $\frac{\sqrt{5}}{5}$

938) $\left\{\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}\right\}$

939) $\left\{\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}\right\}$

940) $\left\{\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}\right\}$

941) $\left\{\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}\right\}$

942) $\left\{\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}\right\}$

943) $\left\{\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}\right\}$

944) $\{0, \pi\}$

945) $\left\{\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}\right\}$

946) $\left\{\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}\right\}$

947) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

948) $\left\{\frac{\pi}{2}, \frac{7\pi}{6}, \frac{11\pi}{6}\right\}$

949) $\left\{\frac{\pi}{6}, \frac{7\pi}{6}\right\}$

950) $\left\{\frac{7\pi}{6}, \frac{11\pi}{6}\right\}$

951) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$

952) $\left\{\frac{\pi}{4}, \frac{5\pi}{4}\right\}$

953) $\left\{\frac{7\pi}{6}, \frac{3\pi}{2}, \frac{11\pi}{6}\right\}$

954) $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

955) $\left\{\frac{2\pi}{3}, \frac{5\pi}{3}\right\}$

956) $\left\{0, \frac{2\pi}{3}, \pi, \frac{4\pi}{3}\right\}$

957) $\left\{\frac{7\pi}{6}, \frac{11\pi}{6}\right\}$

958) $\left\{\frac{5\pi}{6}, \frac{7\pi}{6}\right\}$

959) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$

960) $\left\{\frac{3\pi}{4}, \frac{5\pi}{4}\right\}$

961) $\left\{\frac{2\pi}{3}, \frac{4\pi}{3}\right\}$

962) $\left\{\frac{3\pi}{2}\right\}$

963) $\left\{\frac{3\pi}{2}\right\}$

964) $\left\{\frac{\pi}{4}, \frac{7\pi}{4}\right\}$

965) $\left\{\frac{\pi}{2}\right\}$

966) $\left\{\frac{\pi}{2}\right\}$

967) $\left\{\frac{\pi}{6}, \frac{11\pi}{6}\right\}$