

Answers to

- | | | | |
|--|---|---|---|
| 1) $a^2 + 4a - 1$ | 2) $3n + 6$ | 3) $-x^3 - 7x - 3$ | 4) $2n^2 - 3n + 3$ |
| 5) $3n^3 + 5n - 3$ | 6) $x^3 + 3x^2 - 2x + 4$ | 7) $n^2 + 2n - 7$ | 8) $a^3 + 3a^2 + 2a - 4$ |
| 9) -1 | 10) $a^2 + 4a - 3$ | 11) $-4x^3 + 12x$ | 12) $3x^4 + 3x^3 - 6x - 6$ |
| 13) $-3t^3 - 9t^2 + 12t$ | 14) $-a^3 - 7a^2 - 10a$ | 15) $4a^3 + 2a^2 + 4a + 2$ | 16) $-a^2 + a + 12$ |
| 17) $-8a^3 - 16a^2 - 8a$ | 18) $3n^3 - 4n^2 + 12n - 16$ | 19) $3a^3 - 2a^2 - 12a + 8$ | |
| 20) $a^3 - 2a^2 - 4a + 8$ | 21) -1 | 22) $\frac{x^2 + 5}{3x + 3}$ | 23) $\frac{t^2 - 4t}{t - 2}$ |
| 24) $\frac{x^2}{2}$ | 25) $\frac{4n + 3}{-2n^2 - 2n}$ | 26) $\frac{t^3 + t^2}{t + 4}$ | 27) 3 |
| 28) $\frac{-3n^3 + 5n}{2n + 3}$ | 29) $\frac{2x - 5}{x + 2}$ | 30) $\frac{3x + 2}{x^3 - 4}$ | 31) $3n^3 - 9n^2 - 6n + 6$ |
| 32) $28x - 8$ | 33) $-20n - 21$ | 34) $5n^3 + 4n - 5$ | 35) $3n^3 + 12n + 18$ |
| 36) $3n^2 - 9n - 18$ | 37) $-14n - 19$ | 38) $-8t^3 - 16t^2 - 12t - 20$ | |
| 39) $-3n$ | 40) $-5x^3 - 24x - 4$ | 41) $-4t^3 - 8t^2 + 2$ | 42) $12a + 7$ |
| 43) $-3x^3 + x^2 - 4$ | 44) $3a^2 + 11$ | 45) $3x^3 + 15x^2 - 5$ | 46) $4t^2 + 13$ |
| 47) $9x^2 - 12x + 3$ | 48) $4x - 11$ | 49) $2a^3 - 10a + 2$ | 50) $27x^2 + 90x + 78$ |
| 51) $8n^3 - 36n^2 + 54n - 26$ | 52) $-27x^2 + 3$ | 53) $x + 5$ | |
| 54) $4n + 6$ | 55) $16t - 9$ | 56) $2t - 2$ | 57) $4x + 2$ |
| 58) $-3n^3 - 27n^2 - 81n - 80$ | 59) $x^2 + 2$ | 60) $4x^2 - 19$ | |
| 61) 4 | 62) -42 | 63) 78 | 64) 2 |
| 65) -39 | 66) -70 | 67) 56 | 68) 52 |
| 69) 1 | 70) 0 | 71) $-\frac{13}{23}$ | 72) 39 |
| 73) -30 | 74) $\frac{41}{44}$ | 75) -10 | 76) 3 |
| 77) 8 | 78) 2 | 79) -5 | 80) -4 |
| 81) $g^{-1}(x) = \frac{-5 - 3x}{5}$ | 82) $f^{-1}(n) = -n - 1$ | 83) $g^{-1}(x) = \frac{x - 3}{3}$ | 84) $h^{-1}(n) = \frac{-20 - n}{5}$ |
| 85) $g^{-1}(x) = \frac{-3x - 7}{2}$ | 86) $g^{-1}(x) = -1 - \frac{4}{3}x$ | 87) $g^{-1}(n) = \frac{-2n - 2}{5}$ | 88) $f^{-1}(n) = -\frac{1}{4}n - \frac{3}{4}$ |
| 89) $f^{-1}(x) = \frac{15 + 4x}{3}$ | 90) $g^{-1}(n) = -4n - 4$ | 91) $f^{-1}(x) = 3x - 1$ | 92) $g^{-1}(x) = 3x - 9$ |
| 93) $g^{-1}(x) = -\frac{2}{3}x + \frac{4}{3}$ | 94) $g^{-1}(n) = -3n - 5$ | 95) $h^{-1}(x) = x + 2$ | 96) $f^{-1}(x) = -\frac{4}{3}x$ |
| 97) $g^{-1}(x) = \frac{-12 + x}{3}$ | 98) $f^{-1}(x) = \frac{-3x - 15}{10}$ | 99) $g^{-1}(x) = \frac{-15 - 3x}{5}$ | 100) $f^{-1}(x) = 2 - \frac{2}{5}x$ |
| 101) $f^{-1}(x) = \sqrt[3]{x} + 3$ | 102) $g^{-1}(x) = 2x^3 - 2$ | 103) $f^{-1}(x) = (x + 1)^3$ | |
| 104) $f^{-1}(x) = -(x + 3)^3$ | 105) $f^{-1}(x) = 2 + (x - 2)^3$ | 106) $g^{-1}(x) = (x + 1)^5 + 3$ | |
| 107) $f^{-1}(x) = x^3 + 2$ | 108) $f^{-1}(x) = \frac{-6 - \sqrt[5]{16x}}{2}$ | 109) $g^{-1}(x) = \sqrt[3]{\frac{-x + 3}{2}}$ | |
| 110) $f^{-1}(x) = \sqrt{\frac{x - 1}{2}}$ | 111) $h^{-1}(x) = -\sqrt[5]{x}$ | 112) $f^{-1}(x) = -3 + x^3$ | |
| 113) $g^{-1}(x) = \frac{-6 - \sqrt[3]{4x}}{2}$ | 114) $h^{-1}(x) = 2x^3 - 3$ | 115) $f^{-1}(x) = 2(x - 3)^3$ | |
| 116) $h^{-1}(x) = \sqrt{x + 1} + 1$ | 117) $f^{-1}(x) = \sqrt[5]{x - 3} - 1$ | 118) $f^{-1}(x) = -\sqrt[5]{x} - 2$ | |

119) $f^{-1}(x) = -1 + (x - 2)^5$

120) $f^{-1}(x) = -3 + (x + 2)^5$

121) $f^{-1}(x) = \frac{2}{x - 2} - 2$

122) $f^{-1}(n) = \frac{4}{n - 1} - 1$

123) $g^{-1}(x) = -\frac{4}{x + 2} - 2$

124) $f^{-1}(x) = -\frac{4}{x - 1} + 3$

125) $f^{-1}(x) = -\frac{3}{x - 2} + 2$

126) $g^{-1}(x) = -\frac{2}{x - 2} - 2$

127) $f^{-1}(x) = \frac{3}{x} - 1$

128) $h^{-1}(n) = \frac{4}{-n - 3} + 2$

129) $h^{-1}(x) = \frac{3}{x + 1} + 1$

130) $g^{-1}(x) = \frac{3}{x - 2} - 1$

131) $g^{-1}(x) = -\frac{3}{x + 2} + 3$

132) $g^{-1}(x) = -\frac{2}{x + 1} - 2$

133) $f^{-1}(x) = \frac{4}{x}$

134) $f^{-1}(x) = \frac{1}{x - 1} + 2$

135) $h^{-1}(n) = \frac{1}{n + 2} + 2$

136) $f^{-1}(x) = -\frac{4}{x + 1} - 3$

137) $f^{-1}(x) = -\frac{4}{x + 1} + 2$

138) $f^{-1}(n) = -\frac{1}{n + 2} + 1$

139) $f^{-1}(x) = -\frac{2}{x - 1} - 1$

140) $g^{-1}(x) = \frac{1}{x + 3} - 2$

141) Yes

142) Yes

143) No

144) No

145) No

146) Yes

147) No

148) Yes

149) No

150) Yes

151) No

152) No

153) Yes

154) Yes

155) Yes

156) Yes

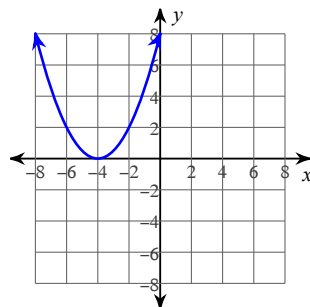
157) Yes

158) No

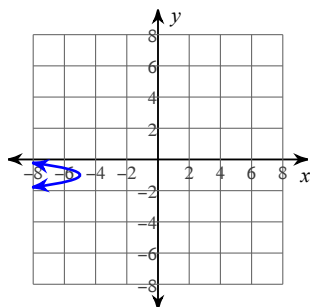
159) No

160) Yes

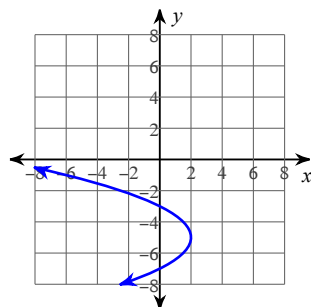
161)



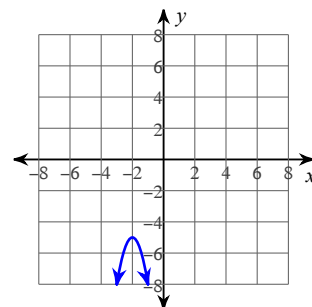
162)



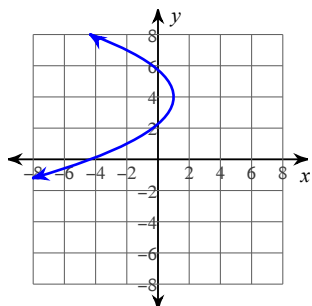
163)



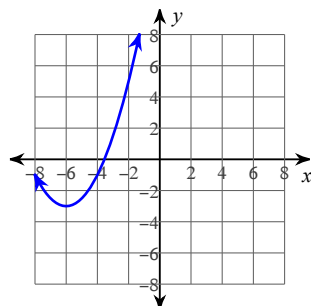
164)



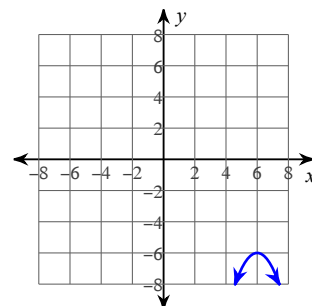
165)



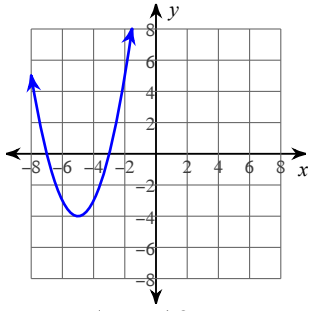
166)



167)



168)



171) $y = -5(x - 8)^2 + 4$

174) $x = -\frac{1}{2}y^2 + 4$

177) $y = -8(x - 3)^2 + 3$

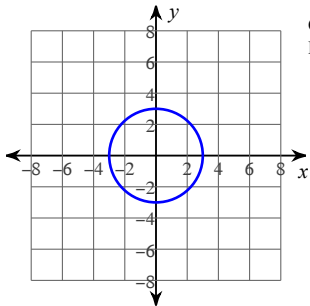
180) $x = \frac{3}{4}(y + 9)^2 - 10$

183) $x = -(y - 10)^2 + 1$

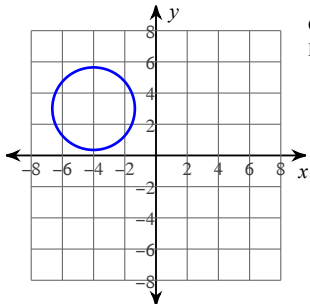
186) $x = \frac{1}{4}(y - 3)^2 + 1$

189) $x = -4(y - 3)^2 - 10$

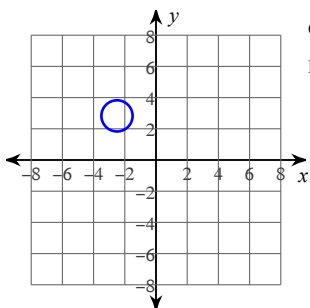
191)

Center: (0, 0)
Radius: 3

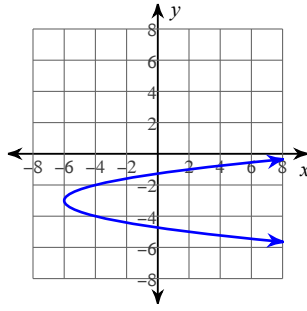
193)

Center: (-4, 3)
Radius: $\sqrt{7}$

195)

Center: $(-\frac{5}{2}, 2\sqrt{2})$
Radius: 1

169)



172) $y = -\frac{1}{3}x^2 - 8$

175) $x = -3(y - 10)^2 + 1$

178) $y = -8(x - 8)^2 + 4$

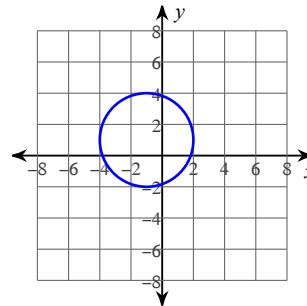
181) $x = -y^2 - 4$

184) $x = -(y - 6)^2 + 9$

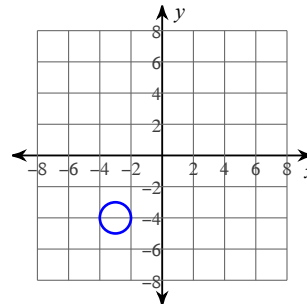
187) $x = 5(y - 10)^2 - 6$

190) $x = 2(y + 7)^2 - 5$

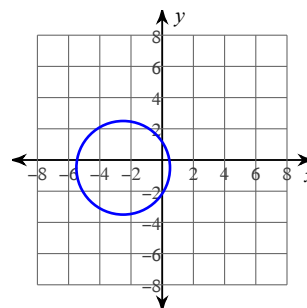
192)

Center: (-1, 1)
Radius: 3

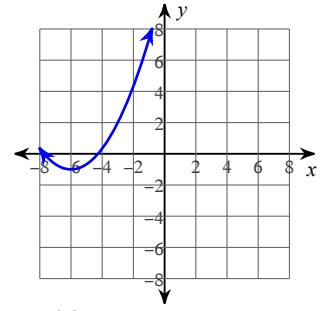
194)

Center: (-3, -4)
Radius: 1

196)

Center: $(-\frac{5}{2}, -\frac{1}{2})$
Radius: 3

170)



173) $x = -2(y + 6)^2 + 9$

176) $y = -(x - 1)^2 + 9$

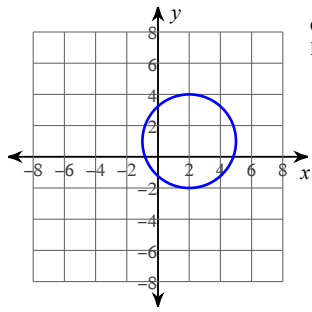
179) $x = -2(y - 10)^2 - 5$

182) $y = -\frac{1}{4}(x - 10)^2 - 3$

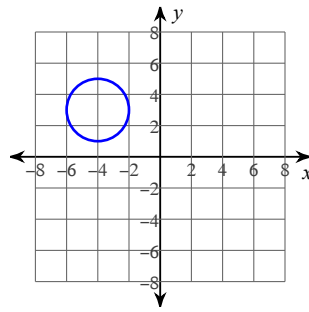
185) $y = (x - 3)^2 + 4$

188) $y = \frac{1}{4}(x + 2)^2 - 5$

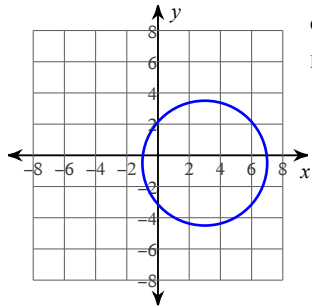
197)

Center: $(2, 1)$
Radius: 3

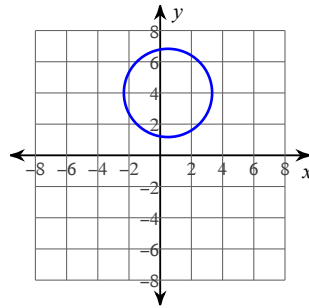
198)

Center: $(-4, 3)$
Radius: 2

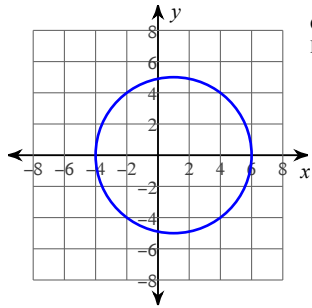
199)

Center: $(3, -\frac{1}{2})$
Radius: 4

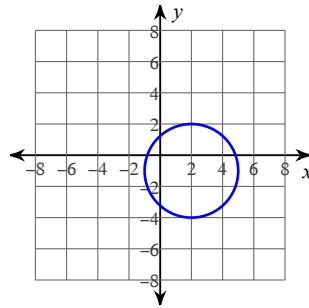
200)

Center: $(\frac{1}{2}, 4)$
Radius: $2\sqrt{2}$

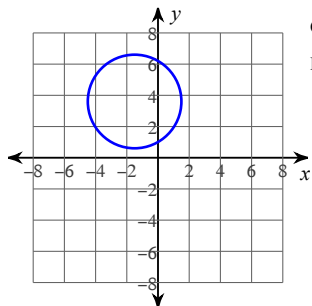
201)

Center: $(1, 0)$
Radius: 5

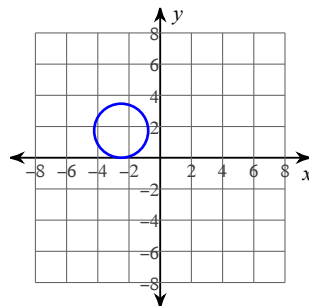
202)

Center: $(2, -1)$
Radius: 3

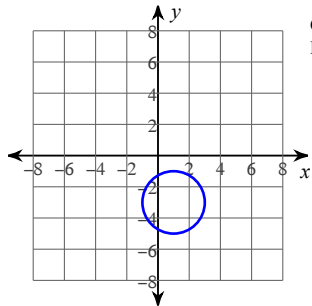
203)

Center: $(-\frac{3}{2}, \sqrt{13})$
Radius: 3

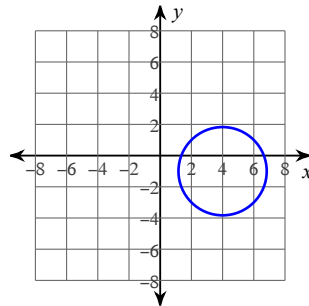
204)

Center: $(-\frac{5}{2}, \sqrt{3})$
Radius: $\sqrt{3}$

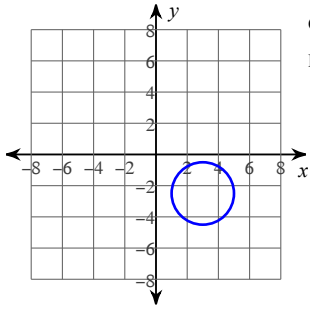
205)

Center: $(1, -3)$
Radius: 2

206)

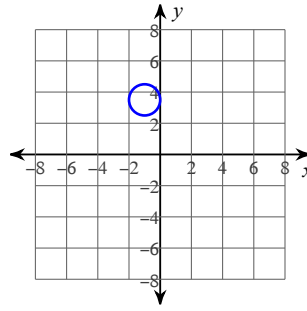
Center: $(4, -1)$
Radius: $2\sqrt{2}$

207)



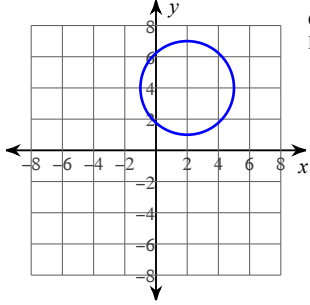
Center: $(3, -\frac{5}{2})$
Radius: 2

208)



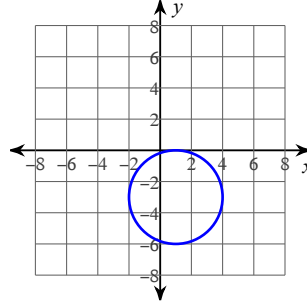
Center: $(-1, \frac{7}{2})$
Radius: 1

209)



Center: (2, 4)
Radius: 3

210)



Center: (1, -3)
Radius: 3

211) $(x - 16)^2 + (y + 10)^2 = 4$

212) $(x - 11)^2 + (y + 4)^2 = 36$

213) $(x + 15)^2 + (y - \frac{1}{2})^2 = 16$

214) $(x - 4\sqrt{11})^2 + (y + 13)^2 = 4$

215) $(x + \frac{13}{2})^2 + (y - \frac{1}{2})^2 = 100$

216) $(x + 2)^2 + (y - 7)^2 = 41$

217) $(x + 5)^2 + (y + 11)^2 = 5$

218) $(x - 13)^2 + (y + 6)^2 = 36$

219) $(x + 5)^2 + (y + 4)^2 = 1$

220) $(x + 14)^2 + (y + 14)^2 = 4$

221) $(x - 4)^2 + (y - 13)^2 = 19$

222) $(x - 10)^2 + (y - 4)^2 = 81$

223) $(x + 2)^2 + (y + 9)^2 = 100$

224) $(x - 15)^2 + (y - 6)^2 = 16$

225) $(x + 9)^2 + (y - 12)^2 = 16$

226) $(x - 13)^2 + (y + 10)^2 = 31$

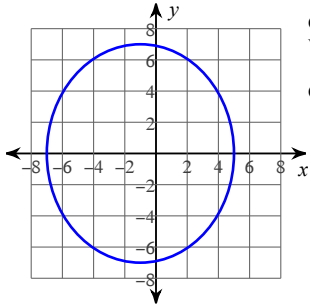
227) $(x - 4)^2 + (y - 13)^2 = 9$

228) $(x + 10)^2 + (y - 14)^2 = 17$

229) $x^2 + (y - 15)^2 = 1$

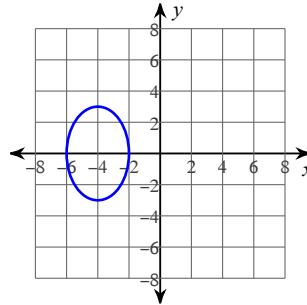
230) $x^2 + (y - 15)^2 = 9$

231)



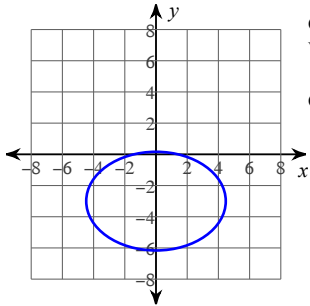
Center: (-1, 0)
Vertices: (-1, 7)
(-1, -7)
Co-vertices: (5, 0)
(-7, 0)

232)



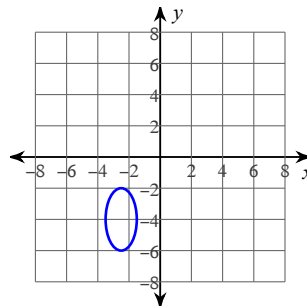
Center: (-4, 0)
Vertices: (-4, 3)
(-4, -3)
Co-vertices: (-2, 0)
(-6, 0)

233)



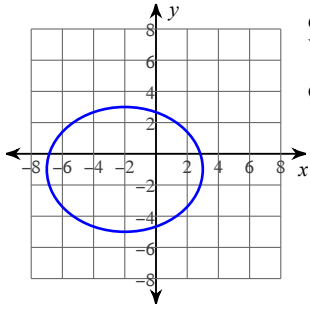
Center: (0, -3)
Vertices: $(2\sqrt{5}, -3)$
 $(-2\sqrt{5}, -3)$
Co-vertices: $(0, -3 + \sqrt{10})$
 $(0, -3 - \sqrt{10})$

234)



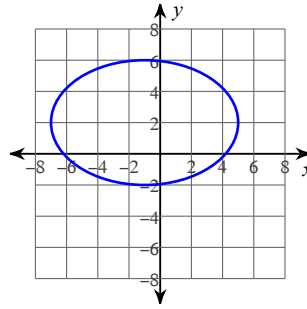
Center: $(-\frac{5}{2}, -4)$
Vertices: $(-\frac{5}{2}, -2)$
 $(-\frac{5}{2}, -6)$
Co-vertices: $(-\frac{3}{2}, -4)$
 $(-\frac{7}{2}, -4)$

235)



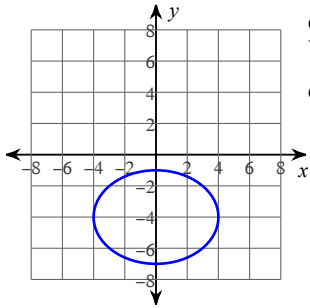
Center: $(-2, -1)$
 Vertices: $(3, -1)$
 $(-7, -1)$
 Co-vertices: $(-2, 3)$
 $(-2, -5)$

236)



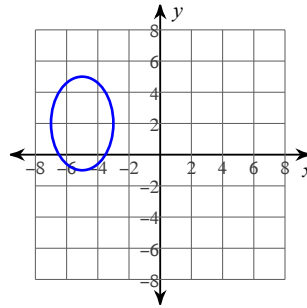
Center: $(-1, 2)$
 Vertices: $(5, 2)$
 $(-7, 2)$
 Co-vertices: $(-1, 6)$
 $(-1, -2)$

237)



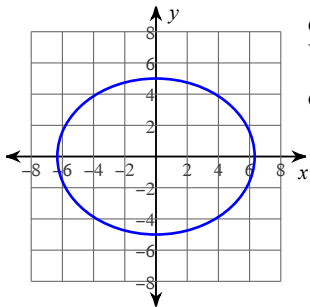
Center: $(0, -4)$
 Vertices: $(4, -4)$
 $(-4, -4)$
 Co-vertices: $(0, -1)$
 $(0, -7)$

238)



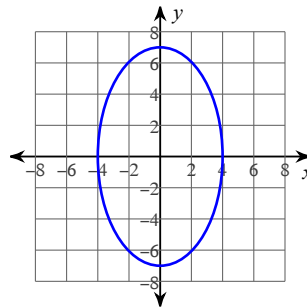
Center: $(-5, 2)$
 Vertices: $(-5, 5)$
 $(-5, -1)$
 Co-vertices: $(-3, 2)$
 $(-7, 2)$

239)



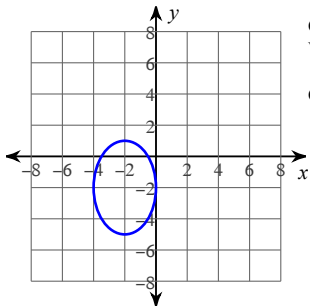
Center: $(0, 0)$
 Vertices: $(2\sqrt{10}, 0)$
 $(-2\sqrt{10}, 0)$
 Co-vertices: $(0, 5)$
 $(0, -5)$

240)



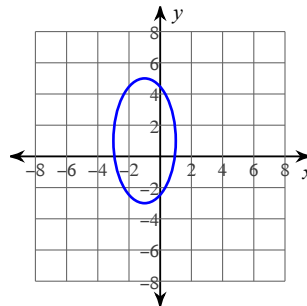
Center: $(0, 0)$
 Vertices: $(0, 7)$
 $(0, -7)$
 Co-vertices: $(4, 0)$
 $(-4, 0)$

241)



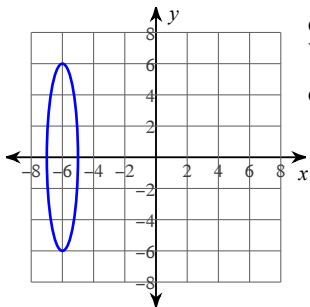
Center: $(-2, -2)$
 Vertices: $(-2, 1)$
 $(-2, -5)$
 Co-vertices: $(0, -2)$
 $(-4, -2)$

242)



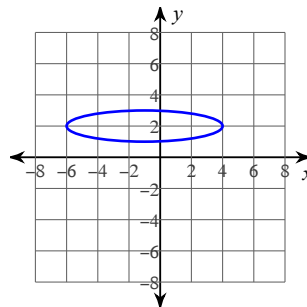
Center: $(-1, 1)$
 Vertices: $(-1, 5)$
 $(-1, -3)$
 Co-vertices: $(1, 1)$
 $(-3, 1)$

243)



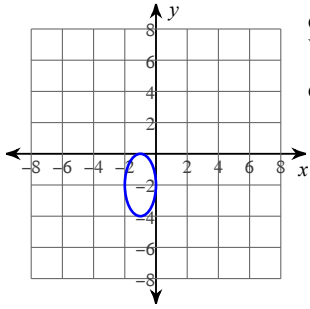
Center: $(-6, 0)$
 Vertices: $(-6, 6)$
 $(-6, -6)$
 Co-vertices: $(-5, 0)$
 $(-7, 0)$

244)



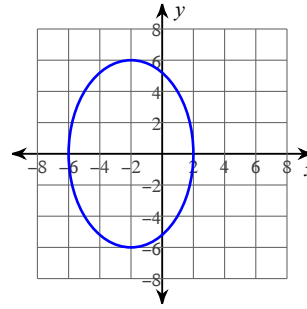
Center: $(-1, 2)$
 Vertices: $(4, 2)$
 $(-6, 2)$
 Co-vertices: $(-1, 3)$
 $(-1, 1)$

245)



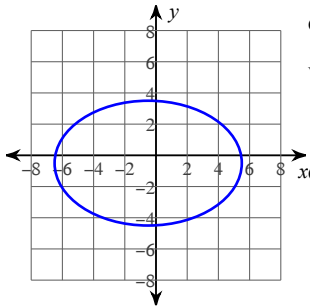
Center: $(-1, -2)$
 Vertices: $(-1, 0)$
 $(-1, -4)$
 Co-vertices: $(0, -2)$
 $(-2, -2)$

246)



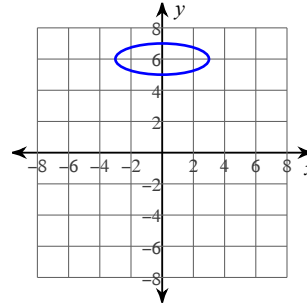
Center: $(-2, 0)$
 Vertices: $(-2, 6)$
 $(-2, -6)$
 Co-vertices: $(2, 0)$
 $(-6, 0)$

247)



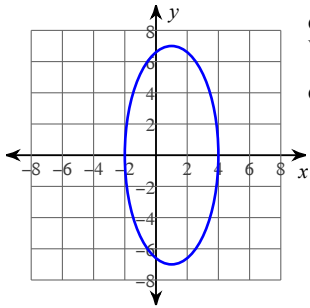
Center: $(-\frac{1}{2}, -\frac{1}{2})$
 Vertices: $(\frac{11}{2}, -\frac{1}{2})$
 $(-\frac{13}{2}, -\frac{1}{2})$
 Co-vertices: $(-\frac{1}{2}, \frac{7}{2})$
 $(-\frac{1}{2}, -\frac{9}{2})$

248)



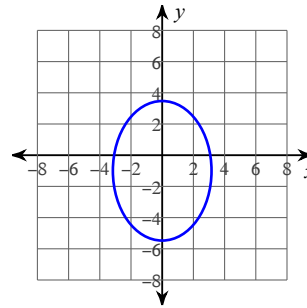
Center: $(0, 6)$
 Vertices: $(3, 6)$
 $(-3, 6)$
 Co-vertices: $(0, 7)$
 $(0, 5)$

249)



Center: $(1, 0)$
 Vertices: $(1, 7)$
 $(1, -7)$
 Co-vertices: $(4, 0)$
 $(-2, 0)$

250)



Center: $(0, -1)$
 Vertices: $(0, -1 + 2\sqrt{5})$
 $(0, -1 - 2\sqrt{5})$
 Co-vertices: $(\sqrt{10}, -1)$
 $(-\sqrt{10}, -1)$

251)
$$\frac{(x-6)^2}{25} + \frac{(y+4)^2}{4} = 1$$

254)
$$\frac{(x-5)^2}{64} + \frac{(y+2)^2}{121} = 1$$

257)
$$\frac{(x+1)^2}{121} + \frac{(y+3)^2}{100} = 1$$

260)
$$\frac{(x+7)^2}{4} + \frac{(y+9)^2}{16} = 1$$

263)
$$\frac{x^2}{16} + \frac{(y-4)^2}{64} = 1$$

266)
$$\frac{\left(x + \frac{5}{2}\right)^2}{144} + \frac{(y+7)^2}{64} = 1$$

269)
$$\frac{(x-1)^2}{81} + \frac{(y+5)^2}{9} = 1$$

272)
$$\frac{(x-7)^2}{9} + \frac{(y+2)^2}{36} = 1$$

275)
$$\frac{(x+2)^2}{36} + \frac{(y+10)^2}{81} = 1$$

252)
$$\frac{(x+2)^2}{81} + \frac{(y+5)^2}{16} = 1$$

255)
$$\frac{(x-4)^2}{121} + \frac{(y+8)^2}{64} = 1$$

258)
$$\frac{(x-8)^2}{25} + \frac{(y-2)^2}{36} = 1$$

261)
$$\frac{(x+1)^2}{25} + \frac{(y-9)^2}{81} = 1$$

264)
$$\frac{(x+3)^2}{144} + \frac{(y-3)^2}{4} = 1$$

267)
$$\frac{(x-7)^2}{49} + \frac{(y-2)^2}{225} = 1$$

270)
$$\frac{(x-6)^2}{115} + \frac{(y+2)^2}{75} = 1$$

273)
$$\frac{(x+10)^2}{100} + \frac{(y-3)^2}{64} = 1$$

276)
$$\frac{\left(x + \frac{15}{2}\right)^2}{60} + \frac{\left(y + \frac{7}{2}\right)^2}{75} = 1$$

253)
$$\frac{(x+9)^2}{16} + \frac{(y+8)^2}{121} = 1$$

256)
$$\frac{(x+2)^2}{100} + \frac{(y-3)^2}{49} = 1$$

259)
$$\frac{(x+5)^2}{225} + \frac{(y-5)^2}{81} = 1$$

262)
$$\frac{(x+2)^2}{100} + \frac{(y-5)^2}{121} = 1$$

265)
$$\frac{(x-4)^2}{125} + \frac{(y-9)^2}{55} = 1$$

268)
$$\frac{(x+2)^2}{169} + \frac{(y-5)^2}{64} = 1$$

271)
$$\frac{(x+3)^2}{49} + \frac{(y-4)^2}{196} = 1$$

274)
$$\frac{(x-5)^2}{81} + \frac{(y+3)^2}{36} = 1$$

277)
$$\frac{(x-6)^2}{16} + \frac{(y+5)^2}{144} = 1$$

$$278) \frac{x^2}{25} + \frac{(y-4)^2}{16} = 1$$

$$281) \frac{(x-3)^2}{144} + \frac{(y-2)^2}{36} = 1$$

$$284) \frac{(x+7)^2}{25} + \frac{(y-4)^2}{100} = 1$$

$$287) \frac{(x+8)^2}{90} + \frac{(y-2)^2}{5} = 1$$

$$290) \frac{(x-5)^2}{49} + \frac{y^2}{9} = 1 \quad 291)$$

$$279) \frac{(x+6)^2}{144} + \frac{(y+5)^2}{36} = 1$$

$$282) \frac{(x-4)^2}{100} + \frac{(y-8)^2}{64} = 1$$

$$285) \frac{(x-4)^2}{20} + \frac{(y-1)^2}{115} = 1$$

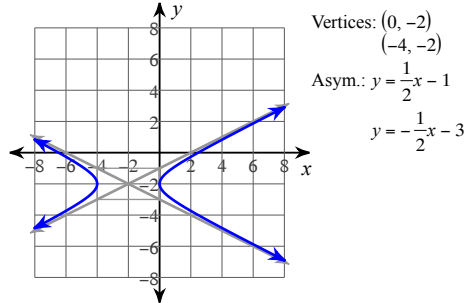
$$288) \frac{(x+4)^2}{4} + \frac{(y+7)^2}{36} = 1$$

$$280) \frac{(x+8)^2}{144} + \frac{(y+4)^2}{36} = 1$$

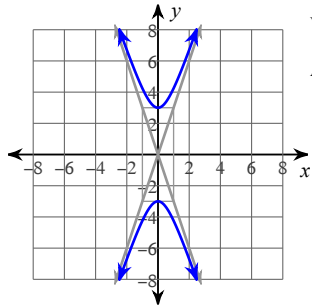
$$283) \frac{x^2}{16} + \frac{(y-5)^2}{100} = 1$$

$$286) \frac{x^2}{144} + \frac{(y-5)^2}{36} = 1$$

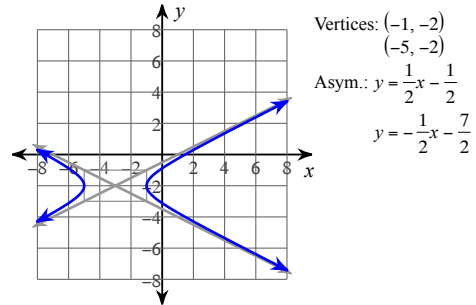
$$289) \frac{(x-6)^2}{64} + \frac{(y-4)^2}{36} = 1$$



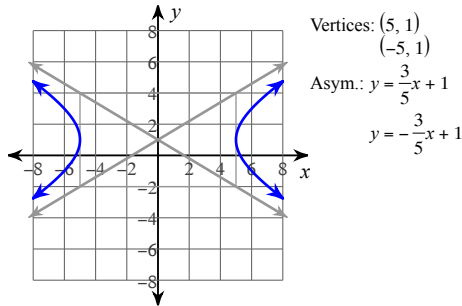
292)



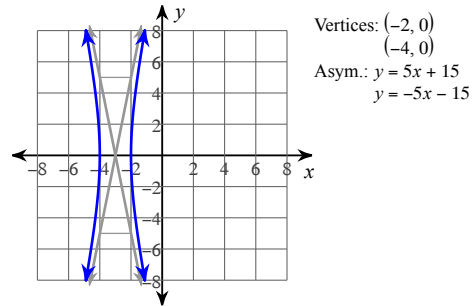
293)



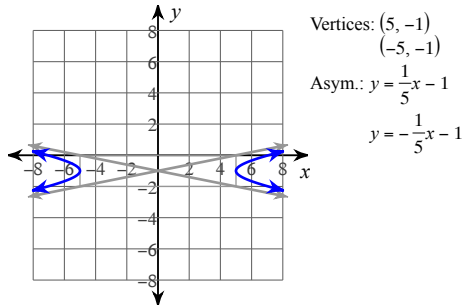
294)



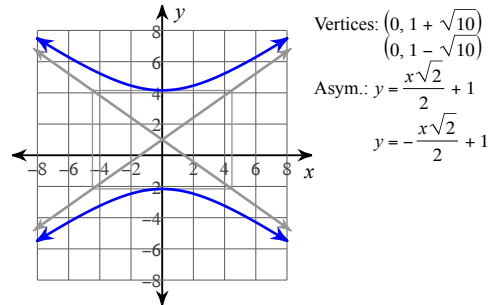
295)



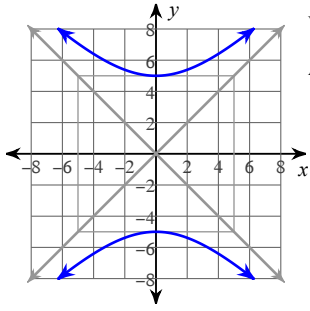
296)



297)

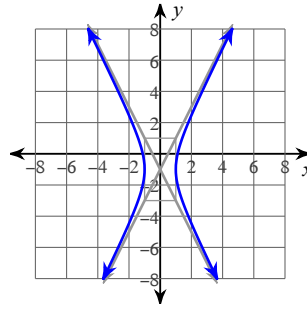


298)



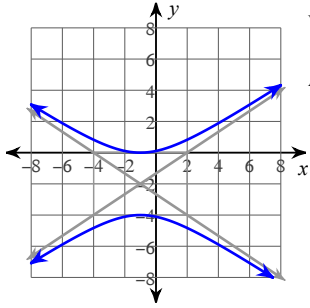
Vertices: $(0, 5)$
 $(0, -5)$
 Asym.: $y = x$
 $y = -x$

299)



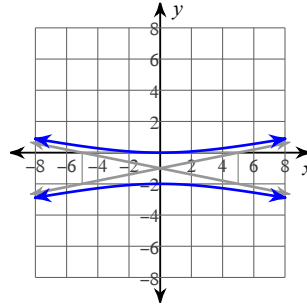
Vertices: $(1, -1)$
 $(-1, -1)$
 Asym.: $y = 2x - 1$
 $y = -2x - 1$

300)



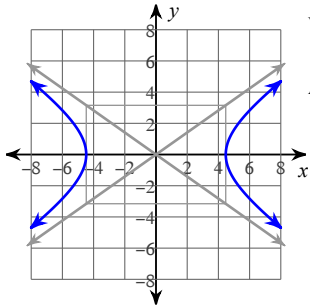
Vertices: $(-1, 0)$
 $(-1, -4)$
 Asym.: $y = \frac{2}{3}x - \frac{4}{3}$
 $y = -\frac{2}{3}x - \frac{8}{3}$

301)



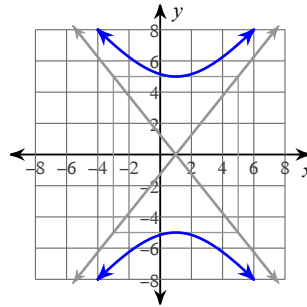
Vertices: $(0, 0)$
 $(0, -2)$
 Asym.: $y = \frac{1}{5}x - 1$
 $y = -\frac{1}{5}x - 1$

302)



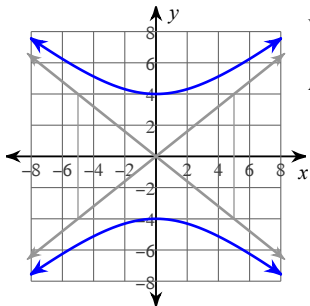
Vertices: $(2\sqrt{5}, 0)$
 $(-2\sqrt{5}, 0)$
 Asym.: $y = \frac{x\sqrt{2}}{2}$
 $y = -\frac{x\sqrt{2}}{2}$

303)



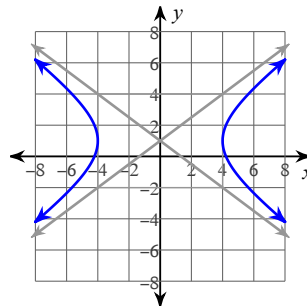
Vertices: $(1, 5)$
 $(1, -5)$
 Asym.: $y = \frac{5}{4}x - \frac{5}{4}$
 $y = -\frac{5}{4}x + \frac{5}{4}$

304)



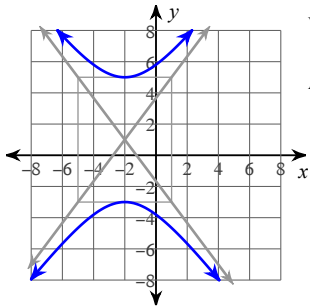
Vertices: $(0, 4)$
 $(0, -4)$
 Asym.: $y = \frac{4}{5}x$
 $y = -\frac{4}{5}x$

305)



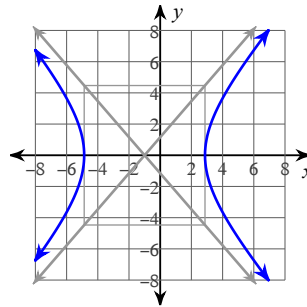
Vertices: $(4, 1)$
 $(-4, 1)$
 Asym.: $y = \frac{3}{4}x + 1$
 $y = -\frac{3}{4}x + 1$

306)



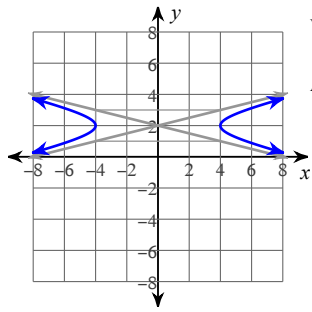
Vertices: $(-2, 5)$
 $(-2, -3)$
 Asym.: $y = \frac{4}{3}x + \frac{11}{3}$
 $y = -\frac{4}{3}x - \frac{5}{3}$

307)



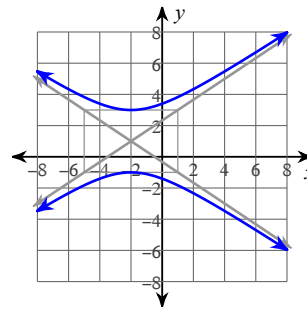
Vertices: $(-1 + \sqrt{15}, 0)$
 $(-1 - \sqrt{15}, 0)$
 Asym.: $y = \frac{2x\sqrt{3}}{3} + \frac{2\sqrt{3}}{3}$
 $y = -\frac{2x\sqrt{3}}{3} - \frac{2\sqrt{3}}{3}$

308)



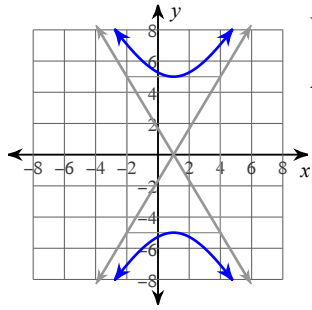
Vertices: $(4, 2)$
 $(-4, 2)$
 Asym.: $y = \frac{1}{4}x + 2$
 $y = -\frac{1}{4}x + 2$

309)



Vertices: $(-2, 3)$
 $(-2, -1)$
 Asym.: $y = \frac{2}{3}x + \frac{7}{3}$
 $y = -\frac{2}{3}x - \frac{1}{3}$

310)



Vertices: $(1, 5)$
 $(1, -5)$
 Asym.: $y = \frac{5}{3}x - \frac{5}{3}$
 $y = -\frac{5}{3}x + \frac{5}{3}$

$$311) \frac{(y+2)^2}{16} - \frac{(x+7)^2}{4} = 1$$

$$312) \frac{(y+8)^2}{36} - \frac{(x+6)^2}{25} = 1$$

$$313) \frac{(y+7)^2}{80} - \frac{(x+8)^2}{105} = 1$$

$$314) \frac{(y-6)^2}{105} - \frac{(x+1)^2}{150} = 1$$

$$315) \frac{(y-8)^2}{196} - \frac{(x-7)^2}{64} = 1$$

$$316) \frac{(x+10)^2}{49} - \frac{(y-6)^2}{121} = 1$$

$$317) \frac{(x-1)^2}{110} - \frac{(y+2)^2}{200} = 1$$

$$318) \frac{(y-7)^2}{169} - \frac{(x-2)^2}{16} = 1$$

$$319) \frac{(x-1)^2}{81} - \frac{(y-9)^2}{9} = 1$$

$$320) \frac{(y+2)^2}{36} - \frac{(x-1)^2}{36} = 1$$

$$321) \frac{(y-6)^2}{20} - \frac{(x-6)^2}{10} = 1$$

$$322) \frac{x^2}{49} - \frac{(y-6)^2}{36} = 1$$

$$323) \frac{(x-5)^2}{49} - \frac{(y-4)^2}{100} = 1$$

$$324) \frac{(x+1)^2}{36} - \frac{(y-2)^2}{49} = 1$$

$$325) \frac{(x-10)^2}{64} - \frac{(y-5)^2}{64} = 1$$

$$326) \frac{(y-4)^2}{144} - \frac{(x-9)^2}{144} = 1$$

$$327) \frac{(y+8)^2}{121} - \frac{(x+6)^2}{100} = 1$$

$$328) \frac{(x+7)^2}{144} - \frac{(y+6)^2}{16} = 1$$

$$329) \frac{(y-2)^2}{4} - \frac{(x+6)^2}{196} = 1$$

$$330) \frac{(y+1)^2}{64} - \frac{(x+9)^2}{169} = 1$$

$$331) \frac{(x+6)^2}{36} - \frac{(y-3)^2}{144} = 1$$

$$332) \frac{(y-10)^2}{81} - \frac{(x+7)^2}{144} = 1$$

$$333) \frac{(y+7)^2}{36} - \frac{(x+5)^2}{225} = 1$$

$$334) \frac{(x-5)^2}{25} - \frac{(y+2)^2}{36} = 1$$

$$335) \frac{(y-2)^2}{225} - \frac{(x-4)^2}{25} = 1$$

$$336) \frac{(x-6)^2}{144} - \frac{(y+2)^2}{36} = 1$$

$$337) \frac{(x+8)^2}{36} - \frac{(y+2)^2}{81} = 1$$

$$338) \frac{x^2}{36} - \frac{(y-10)^2}{36} = 1$$

$$339) \frac{(y+7)^2}{36} - \frac{(x-3)^2}{25} = 1$$

$$340) \frac{(y-2)^2}{25} - \frac{(x+1)^2}{16} = 1$$

$$341) \frac{(x-10)^2}{16} - \frac{(y+4)^2}{16} = 1$$

$$342) \frac{(x+2)^2}{36} - \frac{y^2}{9} = 1$$

$$343) \frac{(y+1)^2}{36} - \frac{(x-4)^2}{144} = 1$$

$$344) \frac{y^2}{36} - \frac{(x-1)^2}{144} = 1$$

$$345) \frac{(x+7)^2}{36} - \frac{(y+3)^2}{144} = 1$$

$$346) \frac{(x+6)^2}{16} - \frac{(y+3)^2}{144} = 1$$

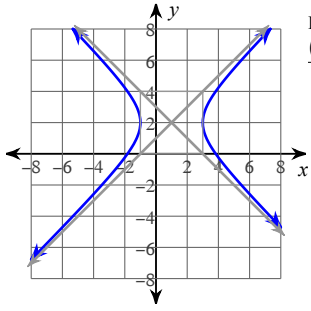
$$347) \frac{(y-3)^2}{144} - \frac{(x+3)^2}{36} = 1$$

$$348) \frac{(y+8)^2}{49} - \frac{(x+2)^2}{9} = 1$$

$$349) \frac{(x+7)^2}{100} - \frac{(y-5)^2}{100} = 1$$

$$350) \frac{(x+1)^2}{100} - \frac{(y-5)^2}{25} = 1$$

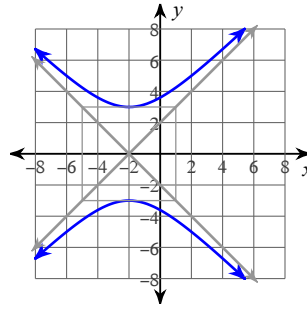
351)



Hyperbola

$$\frac{(x-1)^2}{4} - \frac{(y-2)^2}{4} = 1$$

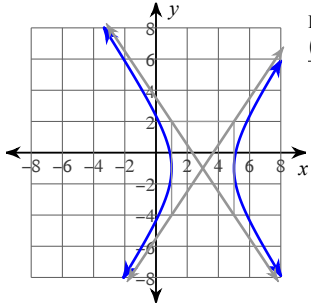
352)



Hyperbola

$$\frac{y^2}{9} - \frac{(x+2)^2}{9} = 1$$

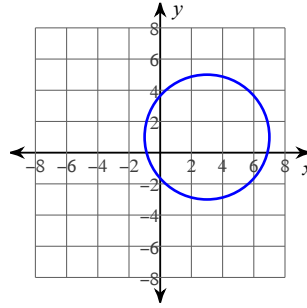
353)



Hyperbola

$$\frac{(x-3)^2}{4} - \frac{(y+1)^2}{9} = 1$$

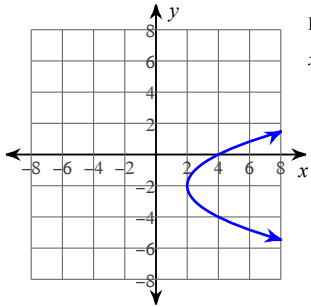
354)



Circle

$$(x-3)^2 + (y-1)^2 = 16$$

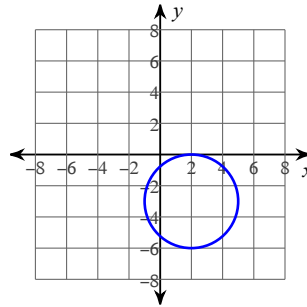
355)



Parabola

$$x = \frac{1}{2}(y+2)^2 + 2$$

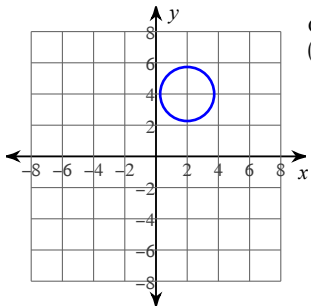
356)



Circle

$$(x-2)^2 + (y+3)^2 = 9$$

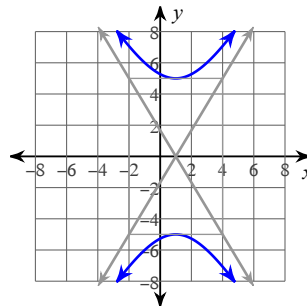
357)



Circle

$$(x-2)^2 + (y-4)^2 = 3$$

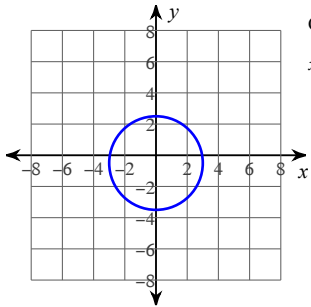
358)



Hyperbola

$$\frac{y^2}{25} - \frac{(x-1)^2}{9} = 1$$

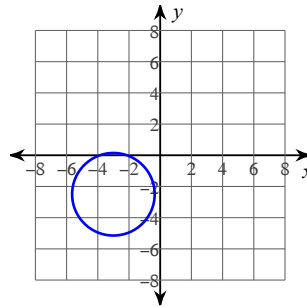
359)



Circle

$$x^2 + \left(y + \frac{1}{2}\right)^2 = 9$$

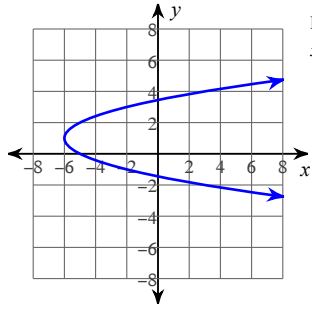
360)



Circle

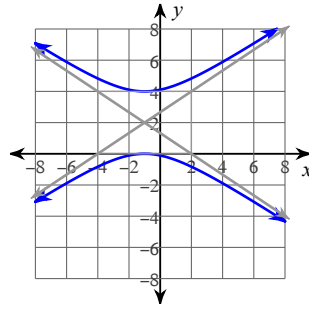
$$(x+3)^2 + \left(y + \frac{5}{2}\right)^2 = 7$$

361)



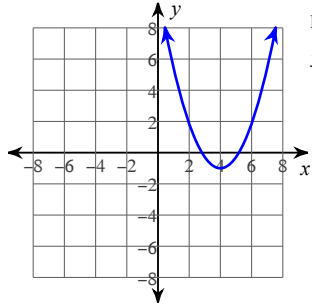
Parabola
 $x = (y - 1)^2 - 6$

362)



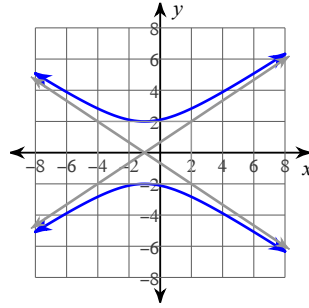
Hyperbola
 $\frac{(y-2)^2}{4} - \frac{(x+1)^2}{9} = 1$

363)



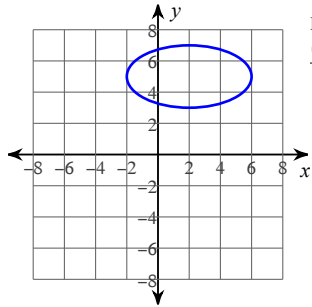
Parabola
 $y = \frac{5}{7}(x-4)^2 - 1$

364)



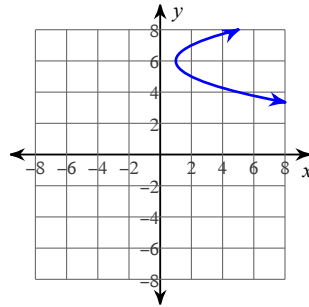
Hyperbola
 $\frac{y^2}{4} - \frac{(x+1)^2}{9} = 1$

365)



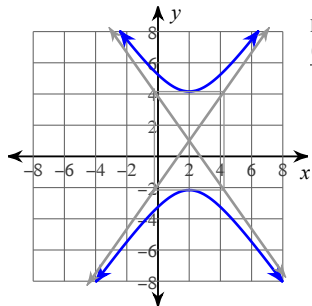
Ellipse
 $\frac{(x-2)^2}{16} + \frac{(y-5)^2}{4} = 1$

366)



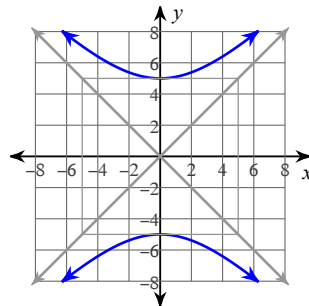
Parabola
 $x = (y-6)^2 + 1$

367)



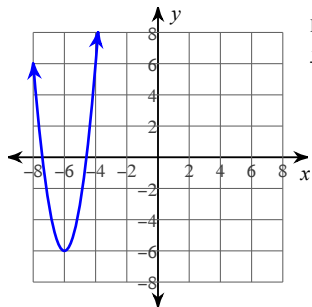
Hyperbola
 $\frac{(y-1)^2}{10} - \frac{(x-2)^2}{5} = 1$

368)



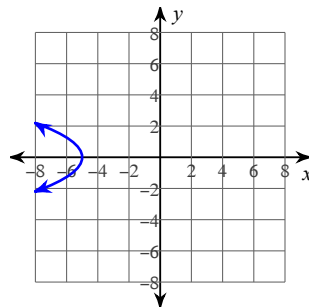
Hyperbola
 $\frac{y^2}{25} - \frac{x^2}{25} = 1$

369)



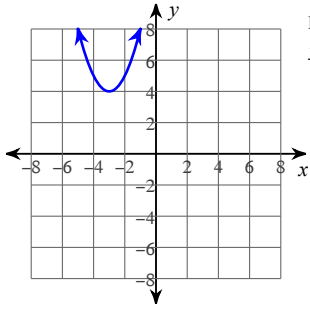
Parabola
 $y = 3(x+6)^2 - 6$

370)



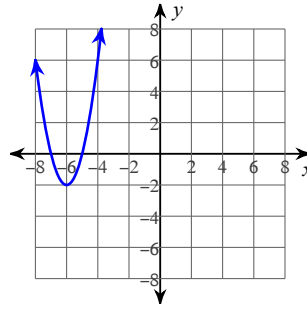
Parabola
 $x = -\frac{5}{8}y^2 - 5$

371)



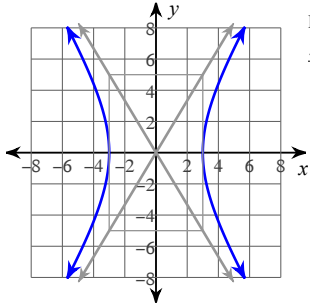
Parabola
 $y = (x + 3)^2 + 4$

372)



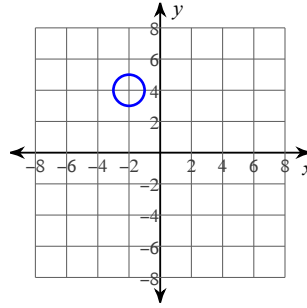
Parabola
 $y = 2(x + 6)^2 - 2$

373)



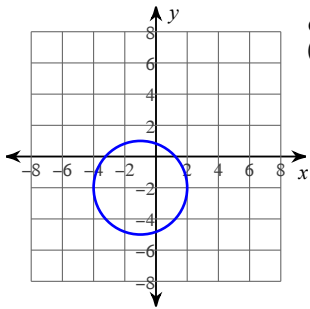
Hyperbola
 $\frac{x^2}{9} - \frac{y^2}{25} = 1$

374)



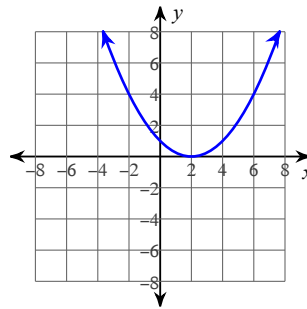
Circle
 $(x + 2)^2 + (y - 4)^2 = 1$

375)



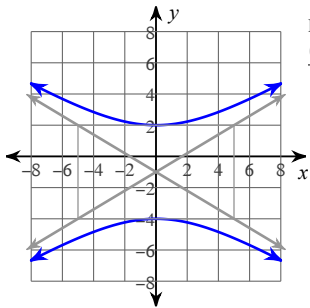
Circle
 $(x + 1)^2 + (y + 2)^2 = 9$

376)



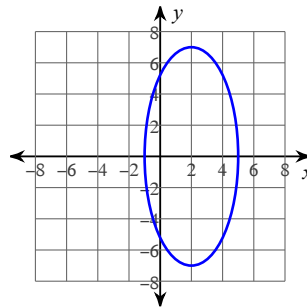
Parabola
 $y = \frac{1}{4}(x - 2)^2$

377)



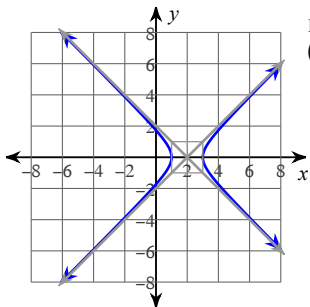
Hyperbola
 $\frac{(y + 1)^2}{9} - \frac{x^2}{25} = 1$

378)



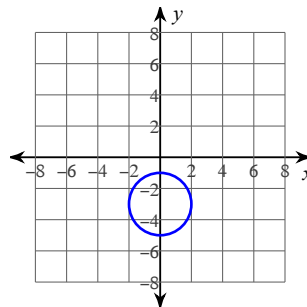
Ellipse
 $\frac{(x - 2)^2}{9} + \frac{y^2}{49} = 1$

379)



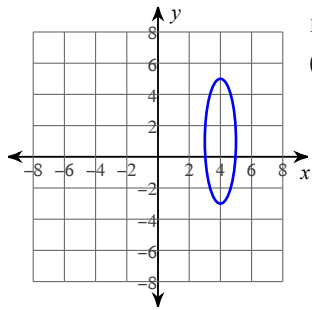
Hyperbola
 $(x - 2)^2 - y^2 = 1$

380)



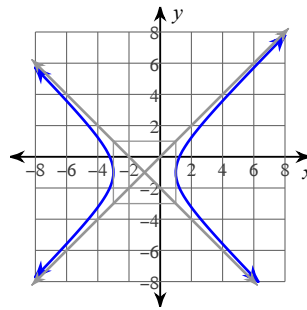
Circle
 $x^2 + (y + 3)^2 = 4$

381)



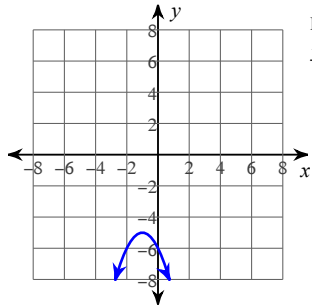
Ellipse
 $(x - 4)^2 + \frac{(y - 1)^2}{16} = 1$

382)



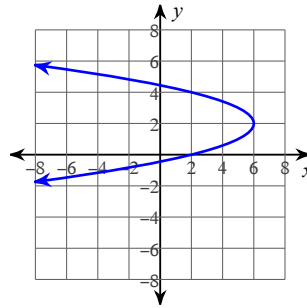
Hyperbola
 $\frac{(x + 1)^2}{4} - \frac{(y + 1)^2}{4} = 1$

383)



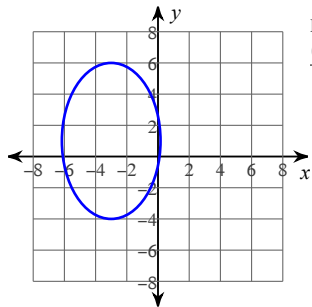
Parabola
 $y = -(x + 1)^2 - 5$

384)



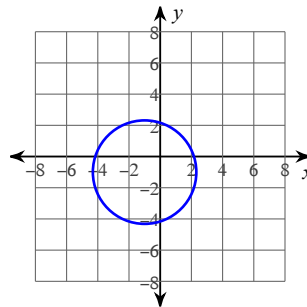
Parabola
 $x = -(y - 2)^2 + 6$

385)



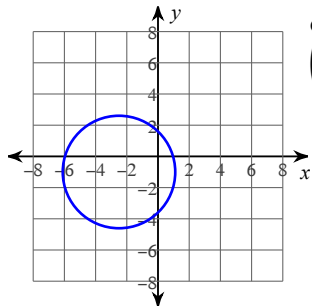
Ellipse
 $\frac{(x + 3)^2}{10} + \frac{(y - 1)^2}{25} = 1$

386)



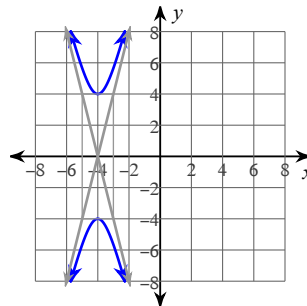
Circle
 $(x + 1)^2 + (y + 1)^2 = 11$

387)



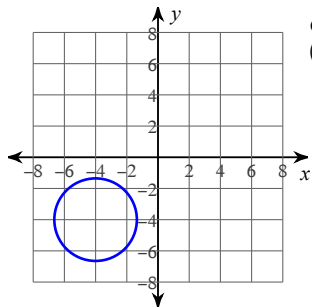
Circle
 $\left(x + \frac{5}{2}\right)^2 + (y + 1)^2 = 13$

388)



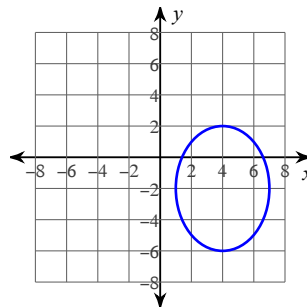
Hyperbola
 $\frac{y^2}{16} - (x + 4)^2 = 1$

389)



Circle
 $(x + 4)^2 + (y + 4)^2 = 7$

390)



Ellipse
 $\frac{(x - 4)^2}{9} + \frac{(y + 2)^2}{16} = 1$

391) (0, -4)

392) (-2, 4)

393) (0, -1), (0, 1)

394) (3, 5)

395) (10, 8), (10, 4)

396) (1, -3)

397) (0, -6), (0, -10), (-10, -6), (-10, -10)

398) (0, 4)

399) (-3, 1), (-7, 1)

400) (0, 6), (0, 2), (-2, 6), (-2, 2)

401) (-1, 7), (-2, 9), (-2, 5)

402) (-4, 2), (-6, 2), (-1, -2), (-9, -2)

403) (9, -2), (9, -4), (-1, 0), (-1, -6)

404) (-3, 5), (-5, 5), (2, -1), (-10, -1)

405) No solution.

406) (7, -2), (10, -8), (4, -8)

407) (-4, -9), (2, 6), (-10, 6)

408) (-2, -3), (5, -8), (-9, -8)

409) (4, 1)

410) (-1, -6), (3, -3), (3, -9)

411) (3, 7), (3, -1)

412) (7, -8), (9, 3), (5, 3)

413) (9, 2), (7, 2)

- 414) $(5, -4), (5, -8), (0, -5), (0, -7)$
 416) $(-6, -3), (-6, -7), (-2, -4), (-2, -6)$
 419) $(4, -5), (-4, -5), (4, 4), (-4, 4)$
 421) $(4, 5), (-1, 5)$ 422) $(-1, -8)$
 424) $(6, -3)$ 425) No solution.
 428) $(9, 2), (9, -10), (8, -2), (8, -6)$
 430) $(6, -4), (-10, -4), (6, 9), (-10, 9)$
 433) $(-6, 5)$ 434) $(-2, -4)$
 436) $(-1, -6)$ 437) $(-3, -6)$
 439) $(7, 10), (7, 2), (2, 10), (2, 2)$
 441) $(7, 0)$ 442) $(0, 2), (5, -9), (-5, -9)$ 443) $(-6, 1)$
 444) $(-5, 7), (-7, 7)$ 445) $(-5, -2), (-5, -8), (0, -3), (0, -7)$ 446) No solution.
 447) $(6, 5), (-8, 5)$ 448) $(-2, 0), (-10, 0)$ 449) $(-2, 6), (3, 7), (3, 5)$
 450) $(2, -2), (5, 6), (5, -10)$

- 415) $(6, 1), (6, -3), (1, 5), (1, -7)$
 417) $(7, 3)$ 418) $(-8, -3)$
 420) $(-2, 8), (-10, 8), (-5, -3), (-7, -3)$
 423) $(-9, 4), (-1, 5), (-1, 3)$
 426) No solution. 427) $(3, 2), (3, -6)$
 429) $(1, 1), (-7, 1), (4, -10), (-10, -10)$
 431) $(-2, 0)$ 432) $(4, 6)$
 435) $(1, 1), (7, 9), (-5, 9)$
 438) $(-7, 5), (-7, -2)$
 440) $(6, -4), (-2, -4), (9, 0), (-5, 0)$