

Week 8 Practice - Ch. 9-1 to 9-4

Date _____ Period _____

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Identify the vertex and axis of symmetry of each. Then sketch the graph.

1) $y = x^2 - 12x + 36$

3) $y = -x^2 + 12x - 32$

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

7) $y = 2(x+3)^2$

9) $x = -y^2 + 8y - 21$

11) $x = -y^2 - 10y - 25$

13) $x = -2y^2 - 1$

15) $x = -2(y-5)^2$

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

4) $y = x^2 - 8x + 17$

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

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

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

12) $x = -y^2 - 4y - 10$

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

16) $x = \frac{1}{2}(y-5)^2 - 3$

Identify the center and radius of each. Then sketch the graph.

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

19) $(x+2)^2 + (y-1)^2 = 21$

21) $\left(x + \frac{1}{2}\right)^2 + (y - \sqrt{7})^2 = 4$

23) $x^2 + y^2 + 4x + 6y - 3 = 0$

25) $x^2 + y^2 + 6x - 8y + 21 = 0$

27) $x^2 + y^2 + 8x + 7 = 0$

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

20) $(x-4)^2 + \left(y - \frac{3}{2}\right)^2 = 7$

22) $(x+2)^2 + (y+2)^2 = 9$

24) $x^2 + y^2 + 8x + 8y + 30 = 0$

26) $x^2 + y^2 + 6x - 4y + 8 = 0$

28) $x^2 + y^2 + 6x + 4y + 4 = 0$

Identify the center, vertices, co-vertices, and foci of each. Then sketch the graph.

29) $(x+6)^2 + \frac{y^2}{49} = 1$

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

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

35) $49x^2 + 4y^2 - 98x - 147 = 0$

37) $16x^2 + 25y^2 - 100y - 300 = 0$

39) $16x^2 + 36y^2 - 32x - 108y - 479 = 0$

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

32) $\frac{(x+3)^2}{16} + \frac{y^2}{49} = 1$

34) $(x+5)^2 + \frac{y^2}{49} = 1$

36) $9x^2 + 16y^2 - 54x - 128y + 193 = 0$

38) $16x^2 + 25y^2 + 32x + 150y - 159 = 0$

40) $x^2 + 3y^2 - 6y - 42 = 0$

Identify the vertices, foci, and asymptotes of each. Then sketch the graph.

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

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

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

47) $16x^2 - 36y^2 - 32x - 180y - 353 = 0$

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

44) $\frac{x^2}{20} - \frac{(y+1)^2}{5} = 1$

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

48) $x^2 - 4y^2 - 8y - 20 = 0$

$$49) x^2 - 9y^2 + 4x - 5 = 0$$

$$51) x^2 - 16y^2 + 2x + 64y - 79 = 0$$

$$50) -x^2 + 25y^2 - 100y + 75 = 0$$

$$52) -x^2 + 2y^2 + 4y - 18 = 0$$

Use the information provided to write the standard form equation of each circle.

$$53) \text{ Center: } (-8, -8)$$

$$\text{Radius: } 9$$

$$55) \text{ Center: } (-6, 13)$$

$$\text{Radius: } 6$$

$$54) \text{ Center: } (4, -1)$$

$$\text{Radius: } 7$$

$$56) \text{ Center: } (15, 7)$$

$$\text{Radius: } 4$$

Use the information provided to write the general conic form equation of each circle.

$$57) \text{ Center: } (-4, 2)$$

$$\text{Radius: } 2\sqrt{21}$$

$$59) \text{ Center: } (6, -13)$$

$$\text{Radius: } 3$$

$$58) \text{ Center: } (-15, -5)$$

$$\text{Radius: } 4$$

$$60) \text{ Center: } (8, 8)$$

$$\text{Radius: } \sqrt{69}$$

Use the information provided to write the standard form equation of each ellipse.

$$61) \text{ Center: } (-1, 0)$$

$$\text{Vertex: } (-1, 10)$$

$$\text{Focus: } (-1, \sqrt{51})$$

$$62) \text{ Center: } \left(9, -\frac{9}{2}\right)$$

$$\text{Vertex: } \left(9, \frac{11}{2}\right)$$

$$\text{Focus: } \left(9, \frac{3}{2}\right)$$

$$63) \text{ Center: } (-6, -4)$$

$$\text{Vertex: } (-6, -16)$$

$$\text{Focus: } (-6, -4 + 3\sqrt{15})$$

$$64) \text{ Center: } (3, -9)$$

$$\text{Vertex: } (3, 1)$$

$$\text{Focus: } (3, -15)$$

Use the information provided to write the general conic form equation of each ellipse.

$$65) \text{ Center: } (-3, 1)$$

$$\text{Vertex: } (-3, 15)$$

$$\text{Focus: } (-3, 1 + 7\sqrt{3})$$

$$66) \text{ Center: } \left(-\frac{19}{2}, 3\right)$$

$$\text{Vertex: } \left(-\frac{1}{2}, 3\right)$$

$$\text{Focus: } \left(\frac{-6\sqrt{5} - 19}{2}, 3\right)$$

$$67) \text{ Center: } (7, -5)$$

$$\text{Vertex: } (13, -5)$$

$$\text{Focus: } (7 + 2\sqrt{5}, -5)$$

$$68) \text{ Center: } (7, -5)$$

$$\text{Vertex: } (-3, -5)$$

$$\text{Focus: } (1, -5)$$

Use the information provided to write the standard form equation of each hyperbola.

$$69) \text{ Vertices: } (9, -9), (-1, -9)$$

$$\text{Asymptotes: } y = x - 13$$

$$y = -x - 5$$

$$70) \text{ Vertices: } (14, 7), (-6, 7)$$

$$\text{Asymptotes: } y = \frac{1}{2}x + 5$$

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

$$71) \text{ Vertices: } (-3, 9), (-15, 9)$$

$$\text{Asymptotes: } y = \frac{2}{3}x + 15$$

$$y = -\frac{2}{3}x + 3$$

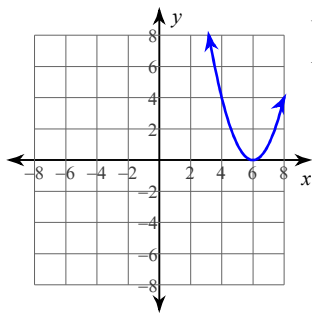
$$72) \text{ Vertices: } (10, 4), (-12, 4)$$

$$\text{Asymptotes: } y = \frac{7}{11}x + \frac{51}{11}$$

$$y = -\frac{7}{11}x + \frac{37}{11}$$

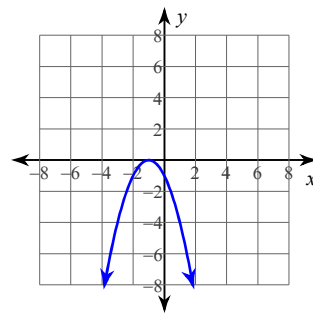
Answers to Week 8 Practice - Ch. 9-1 to 9-4 (ID: 1)

1)



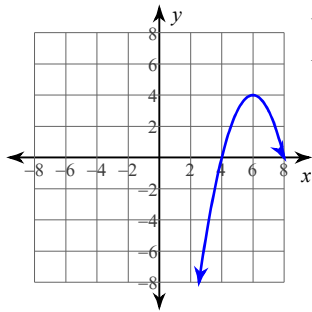
Vertex: $(6, 0)$
Axis of Sym.: $x = 6$

2)



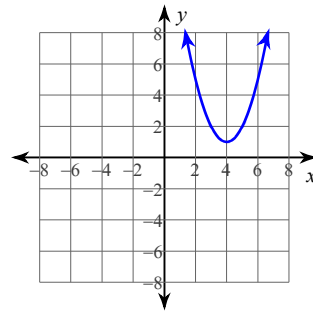
Vertex: $(-1, 0)$
Axis of Sym.: $x = -1$

3)



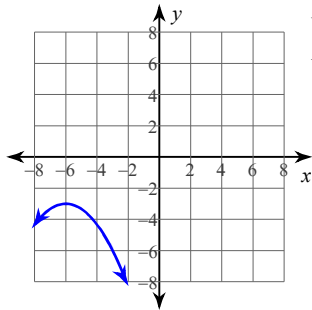
Vertex: $(6, 4)$
Axis of Sym.: $x = 6$

4)



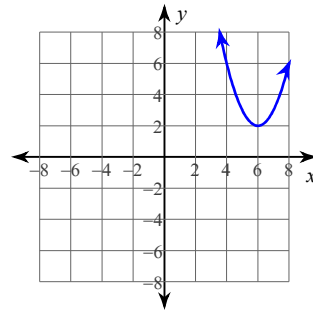
Vertex: $(4, 1)$
Axis of Sym.: $x = 4$

5)



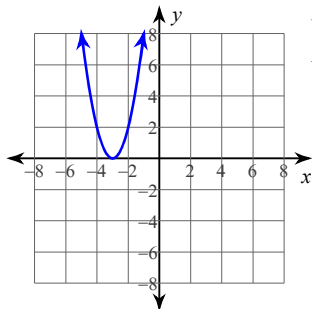
Vertex: $(-6, -3)$
Axis of Sym.: $x = -6$

6)



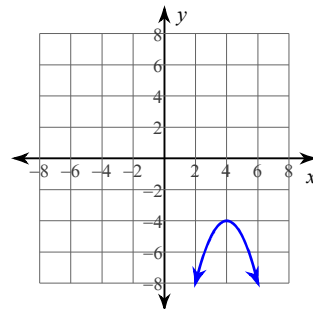
Vertex: $(6, 2)$
Axis of Sym.: $x = 6$

7)



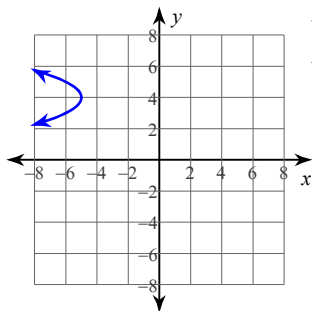
Vertex: $(-3, 0)$
Axis of Sym.: $x = -3$

8)



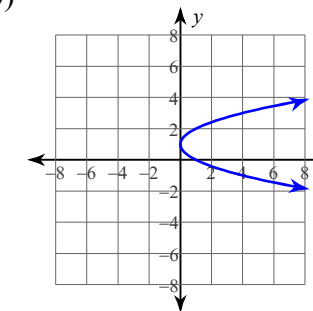
Vertex: $(4, -4)$
Axis of Sym.: $x = 4$

9)



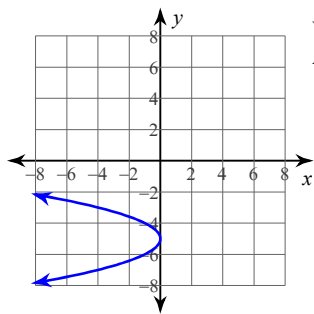
Vertex: $(-5, 4)$
Axis of Sym.: $y = 4$

10)



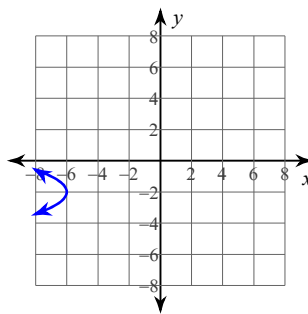
Vertex: $(0, 1)$
Axis of Sym.: $y = 1$

11)



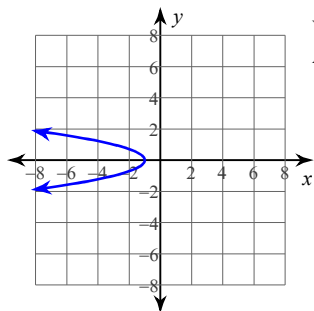
Vertex: $(0, -5)$
Axis of Sym.: $y = -5$

12)



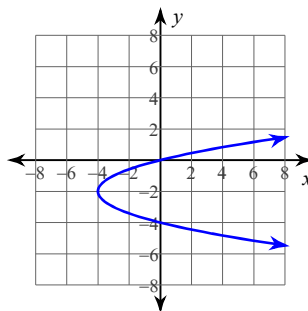
Vertex: $(-6, -2)$
Axis of Sym.: $y = -2$

13)



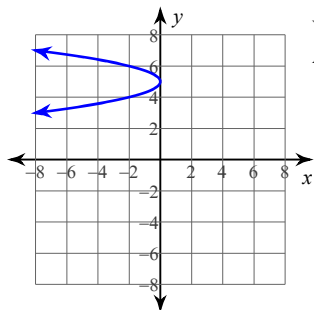
Vertex: $(-1, 0)$
Axis of Sym.: $y = 0$

14)



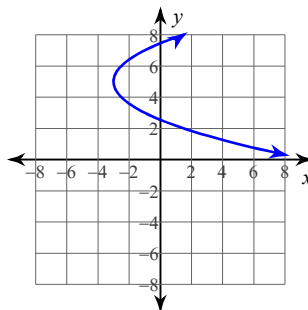
Vertex: $(-4, -2)$
Axis of Sym.: $y = -2$

15)



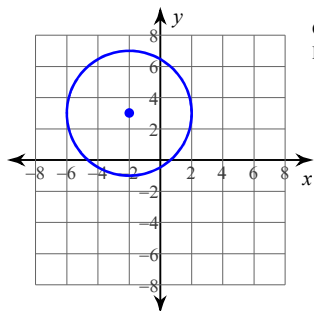
Vertex: $(0, 5)$
Axis of Sym.: $y = 5$

16)



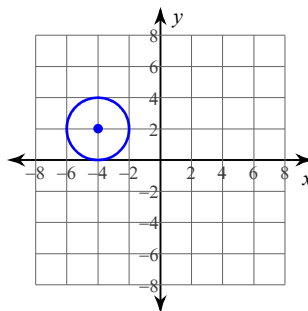
Vertex: $(-3, 5)$
Axis of Sym.: $y = 5$

17)



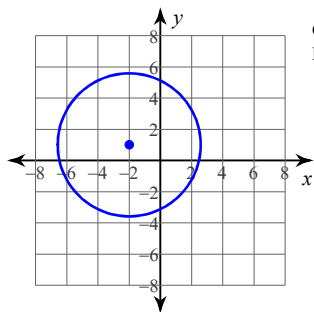
Center: $(-2, 3)$
Radius: 4

18)



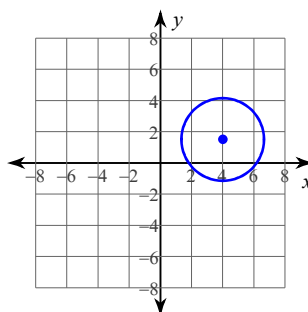
Center: $(-4, 2)$
Radius: 2

19)



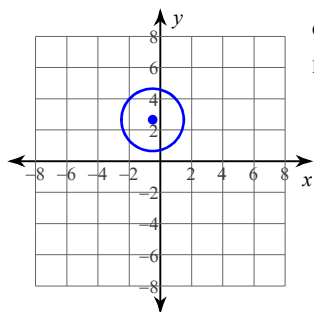
Center: $(-2, 1)$
Radius: $\sqrt{21}$

20)



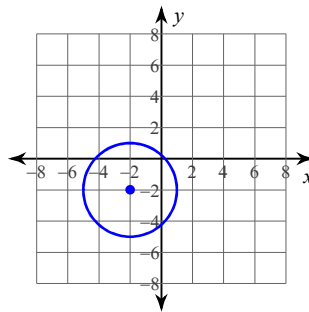
Center: $(4, \frac{3}{2})$
Radius: $\sqrt{7}$

21)



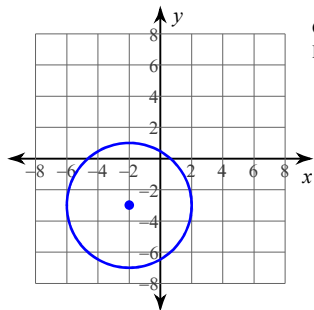
Center: $\left(-\frac{1}{2}, \sqrt{7}\right)$
Radius: 2

22)



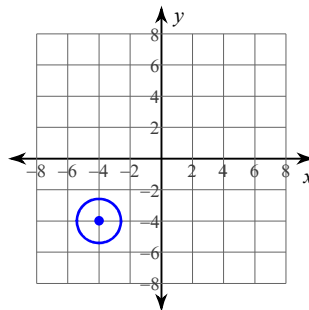
Center: $(-2, -2)$
Radius: 3

23)



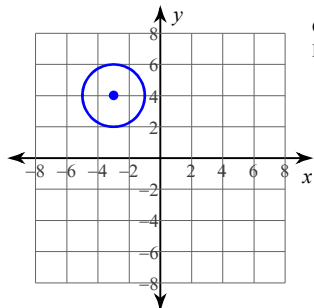
Center: $(-2, -3)$
Radius: 4

24)



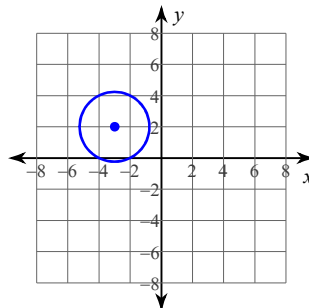
Center: $(-4, -4)$
Radius: $\sqrt{2}$

25)



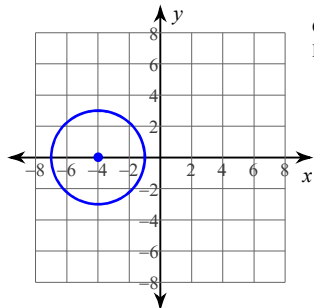
Center: $(-3, 4)$
Radius: 2

26)



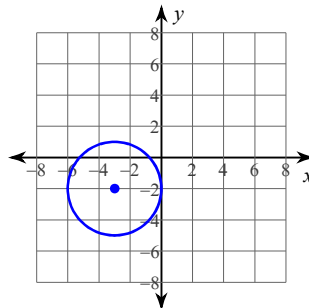
Center: $(-3, 2)$
Radius: $\sqrt{5}$

27)



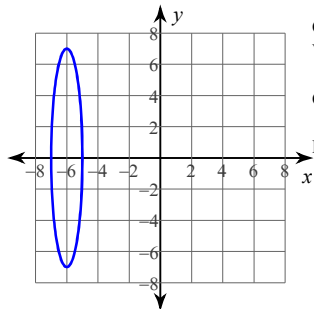
Center: $(-4, 0)$
Radius: 3

28)



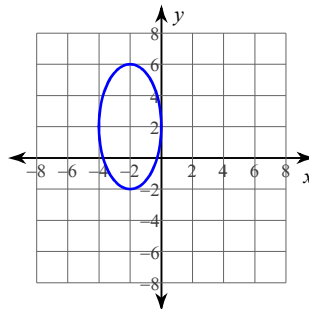
Center: $(-3, -2)$
Radius: 3

29)



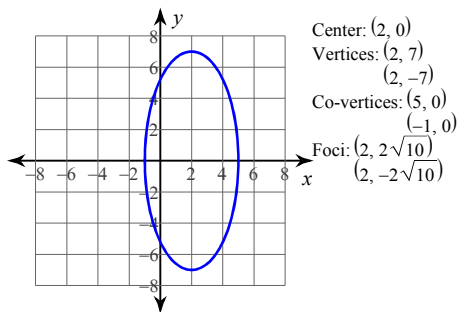
Center: $(-6, 0)$
Vertices: $(-6, 7)$
 $(-6, -7)$
Co-vertices: $(-5, 0)$
 $(-7, 0)$
Foci: $(-6, 4\sqrt{3})$
 $(-6, -4\sqrt{3})$

30)

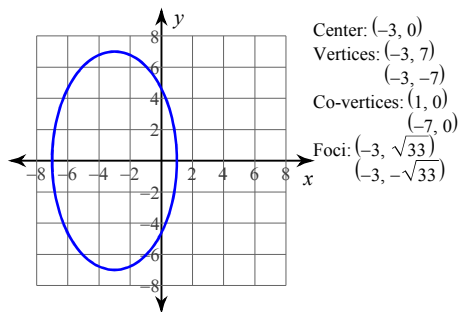


Center: $(-2, 2)$
Vertices: $(-2, 6)$
 $(-2, -2)$
Co-vertices: $(0, 2)$
 $(-4, 2)$
Foci: $(-2, 2 + 2\sqrt{3})$
 $(-2, 2 - 2\sqrt{3})$

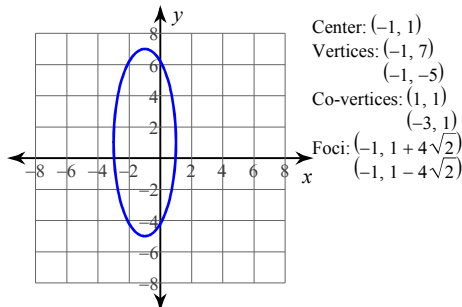
31)



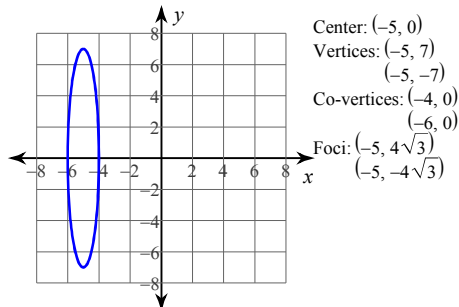
32)



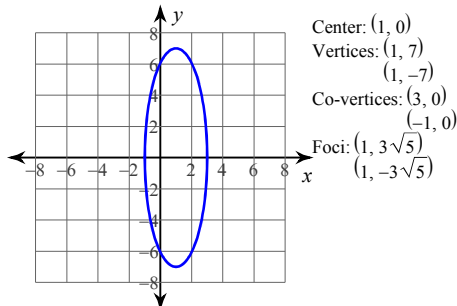
33)



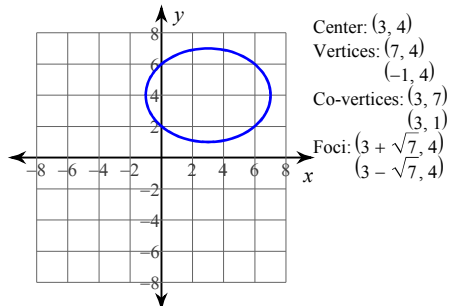
34)



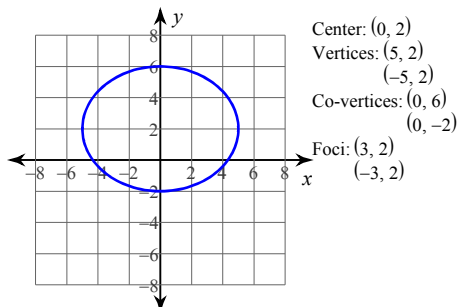
35)



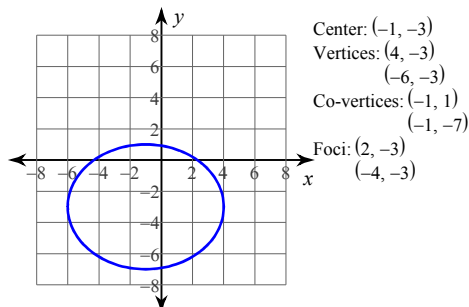
36)



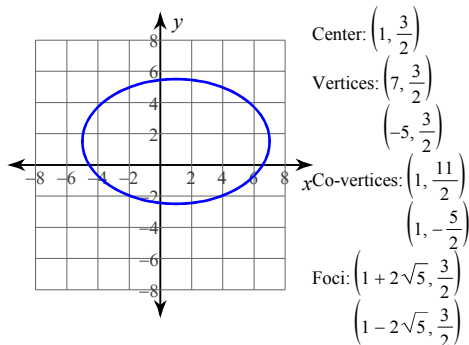
37)



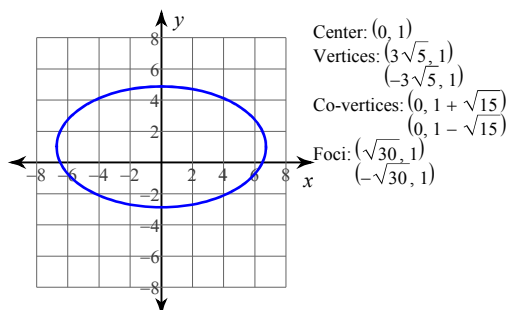
38)



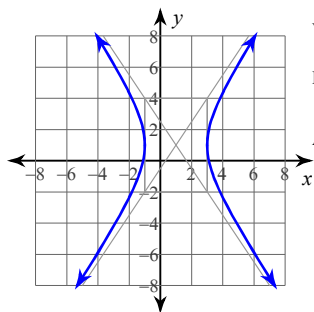
39)



40)

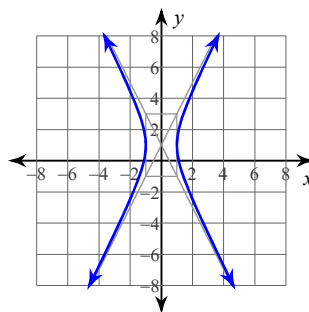


41)



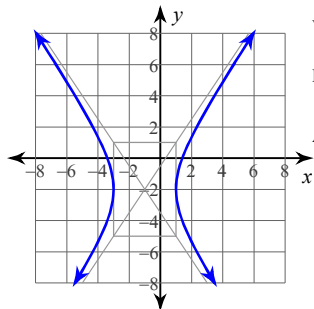
Vertices: $(3, 1)$
 $(-1, 1)$
 Foci: $(1 + \sqrt{13}, 1)$
 $(1 - \sqrt{13}, 1)$
 Asym.: $y = \frac{3}{2}x - \frac{1}{2}$
 $y = -\frac{3}{2}x + \frac{5}{2}$

42)



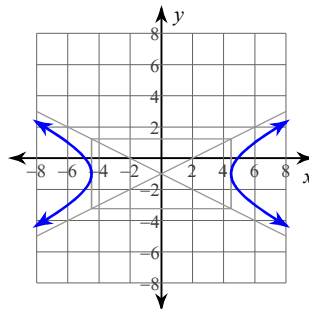
Vertices: $(1, 1)$
 $(-1, 1)$
 Foci: $(\sqrt{5}, 1)$
 $(-\sqrt{5}, 1)$
 Asym.: $y = 2x + 1$
 $y = -2x + 1$

43)



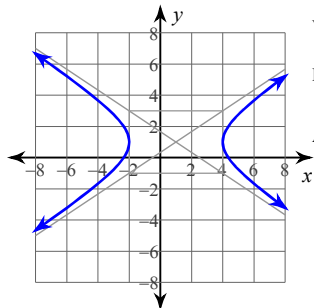
Vertices: $(1, -2)$
 $(-3, -2)$
 Foci: $(-1 + \sqrt{13}, -2)$
 $(-1 - \sqrt{13}, -2)$
 Asym.: $y = \frac{3}{2}x - \frac{1}{2}$
 $y = -\frac{3}{2}x - \frac{7}{2}$

44)



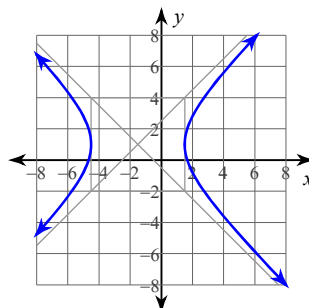
Vertices: $(2\sqrt{5}, -1)$
 $(-2\sqrt{5}, -1)$
 Foci: $(5, -1)$
 $(-5, -1)$
 Asym.: $y = \frac{1}{2}x - 1$
 $y = -\frac{1}{2}x - 1$

45)



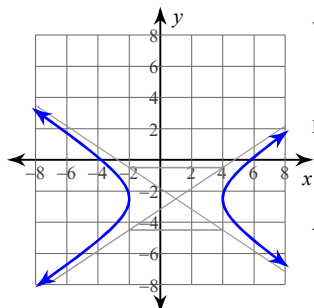
Vertices: $(4, 1)$
 $(-2, 1)$
 Foci: $(1 + \sqrt{13}, 1)$
 $(1 - \sqrt{13}, 1)$
 Asym.: $y = \frac{2}{3}x + \frac{1}{3}$
 $y = -\frac{2}{3}x + \frac{5}{3}$

46)



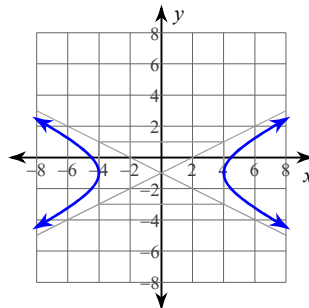
Vertices: $(\frac{3}{2}, 1)$
 $(-\frac{9}{2}, 1)$
 Foci: $(\frac{6\sqrt{2}-3}{2}, 1)$
 $(\frac{-6\sqrt{2}-3}{2}, 1)$
 Asym.: $y = x + \frac{5}{2}$
 $y = -x - \frac{1}{2}$

47)



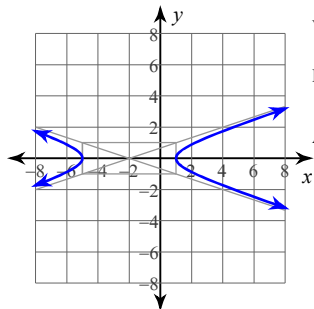
Vertices: $(4, -\frac{5}{2})$
 $(-2, -\frac{5}{2})$
 Foci: $(1 + \sqrt{13}, -\frac{5}{2})$
 $(1 - \sqrt{13}, -\frac{5}{2})$
 Asym.: $y = \frac{2}{3}x - \frac{19}{6}$
 $y = -\frac{2}{3}x - \frac{11}{6}$

48)



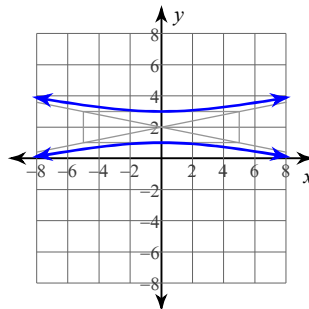
Vertices: $(4, -1)$
 $(-4, -1)$
 Foci: $(2\sqrt{5}, -1)$
 $(-2\sqrt{5}, -1)$
 Asym.: $y = \frac{1}{2}x - 1$
 $y = -\frac{1}{2}x - 1$

49)



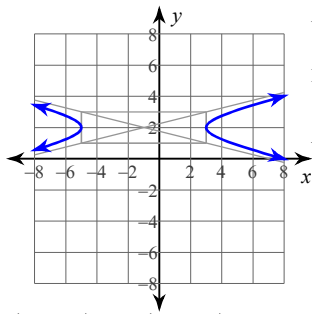
Vertices: $(1, 0)$
 $(-5, 0)$
 Foci: $(-2 + \sqrt{10}, 0)$
 $(-2 - \sqrt{10}, 0)$
 Asym.: $y = \frac{1}{3}x + \frac{2}{3}$
 $y = -\frac{1}{3}x - \frac{2}{3}$

50)



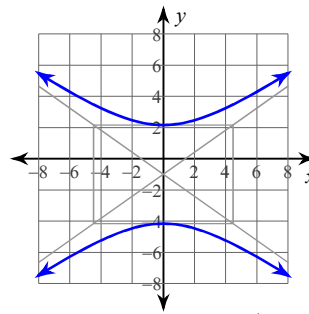
Vertices: $(0, 3)$
 $(0, 1)$
 Foci: $(0, 2 + \sqrt{26})$
 $(0, 2 - \sqrt{26})$
 Asym.: $y = \frac{1}{5}x + 2$
 $y = -\frac{1}{5}x + 2$

51)



Vertices: $(3, 2)$
 $(-5, 2)$
 Foci: $(-1 + \sqrt{17}, 2)$
 $(-1 - \sqrt{17}, 2)$
 Asym.: $y = \frac{1}{4}x + \frac{9}{4}$
 $y = -\frac{1}{4}x + \frac{7}{4}$

52)



Vertices: $(0, -1 + \sqrt{10})$
 $(0, -1 - \sqrt{10})$
 Foci: $(0, -1 + \sqrt{30})$
 $(0, -1 - \sqrt{30})$
 Asym.: $y = \frac{x\sqrt{2}}{2} - 1$
 $y = -\frac{x\sqrt{2}}{2} - 1$

53) $(x + 8)^2 + (y + 8)^2 = 81$

54) $(x - 4)^2 + (y + 1)^2 = 49$

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

56) $(x - 15)^2 + (y - 7)^2 = 16$

57) $x^2 + y^2 + 8x - 4y - 64 = 0$

58) $x^2 + y^2 + 30x + 10y + 234 = 0$

59) $x^2 + y^2 - 12x + 26y + 196 = 0$

60) $x^2 + y^2 - 16x - 16y + 59 = 0$

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

63) $\frac{(x + 6)^2}{9} + \frac{(y + 4)^2}{144} = 1$

64) $\frac{(x - 3)^2}{64} + \frac{(y + 9)^2}{100} = 1$

62) $\frac{(x - 9)^2}{64} + \frac{\left(y + \frac{9}{2}\right)^2}{100} = 1$

65) $4x^2 + y^2 + 24x - 2y - 159 = 0$

66) $4x^2 + 9y^2 + 76x - 54y + 118 = 0$

67) $4x^2 + 9y^2 - 56x + 90y + 277 = 0$

68) $16x^2 + 25y^2 - 224x + 250y - 191 = 0$

69) $\frac{(x - 4)^2}{25} - \frac{(y + 9)^2}{25} = 1$

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

71) $\frac{(x + 9)^2}{36} - \frac{(y - 9)^2}{16} = 1$

72) $\frac{(x + 1)^2}{121} - \frac{(y - 4)^2}{49} = 1$