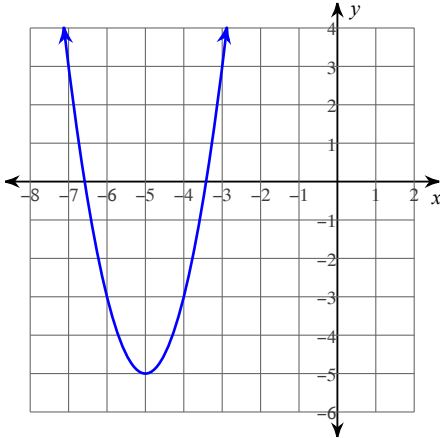


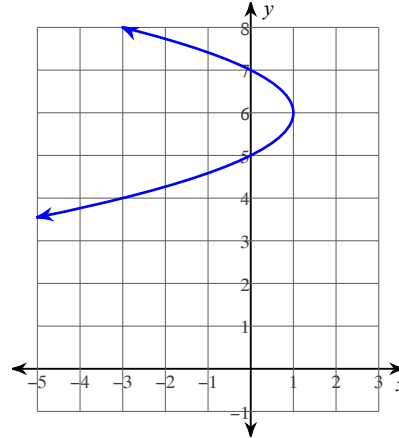
Unit 9 Conic Sections Review

Use the information provided to write the vertex form equation of each parabola.

1)

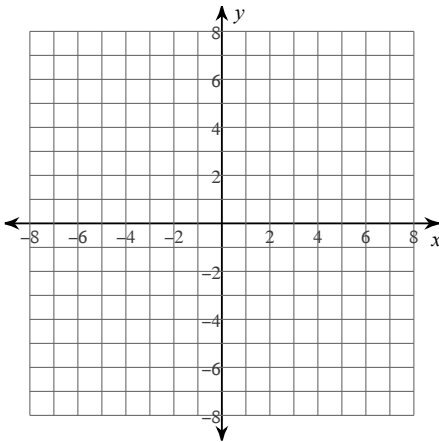


2)

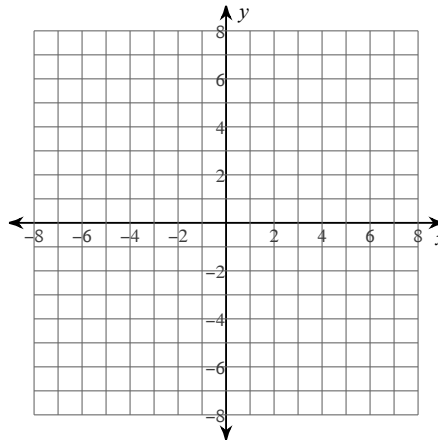


Identify the vertex, focus, directrix, and direction of opening of each. Then sketch the graph.

3)  $x + 1 = (y + 4)^2$



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



Write each equation in transformational form.

5)  $y = \frac{1}{3}x^2 + \frac{2}{3}x - \frac{20}{3}$

6)  $y = -4x^2 - 32x - 60$

$$7) x = -4y^2 + 8y - 8$$

$$8) x = -2y^2 - 24y - 67$$

**Use the information provided to write the transformational form equation of each parabola.**

$$9) \text{ Vertex: } (-7, 0), \text{ Focus: } \left(-7, -\frac{9}{4}\right)$$

$$10) \text{ Vertex: } (-8, -4), \text{ Focus: } \left(-8, -\frac{15}{4}\right)$$

$$11) \text{ Vertex: } (-2, 9), \text{ Focus: } \left(-\frac{33}{16}, 9\right)$$

$$12) \text{ Vertex: } (3, 5), \text{ Focus: } \left(\frac{37}{12}, 5\right)$$

$$13) \text{ Focus: } \left(5, \frac{7}{4}\right), \text{ Directrix: } y = \frac{9}{4}$$

$$14) \text{ Focus: } \left(-10, \frac{3}{4}\right), \text{ Directrix: } y = \frac{5}{4}$$

$$15) \text{ Vertex: } (-5, 8), \text{ Focus: } \left(-\frac{19}{4}, 8\right)$$

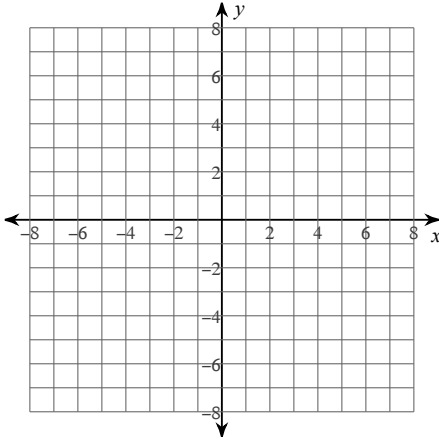
$$16) \text{ Vertex: } (3, -5), \text{ Focus: } \left(\frac{95}{32}, -5\right)$$

17) Vertex:  $(-9, -7)$ , Directrix:  $y = -\frac{15}{2}$

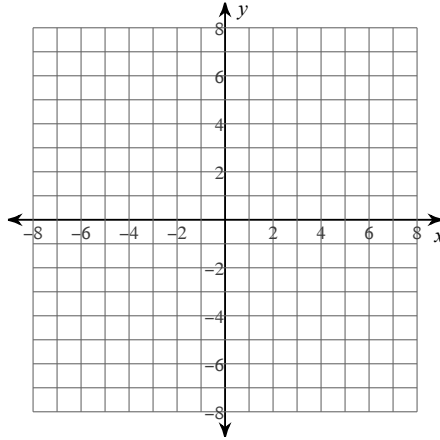
18) Vertex:  $(4, 5)$ , Directrix:  $x = \frac{47}{12}$

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

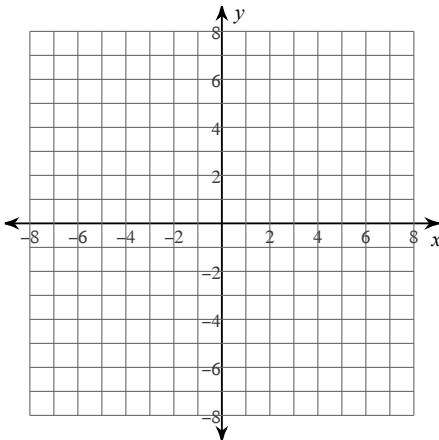
19)  $(x - 3)^2 + (y - 3)^2 = 7$



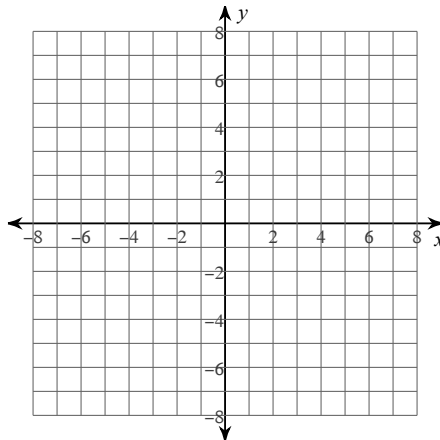
20)  $(x + 1)^2 + (y - 4)^2 = 1$



21)  $x^2 + y^2 + 8x + 4y + 11 = 0$



22)  $x^2 + y^2 + 8x + 4y + 16 = 0$



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

23)  $x^2 + y^2 - 24x + 20y + 235 = 0$

24)  $x^2 + y^2 - 18x - 26y + 234 = 0$

25)  $x^2 + y^2 + 18x + 4y + 41 = 0$

26)  $x^2 + y^2 - 18x + 6y + 54 = 0$

27) Center:  $(-14, -9)$   
Radius: 5

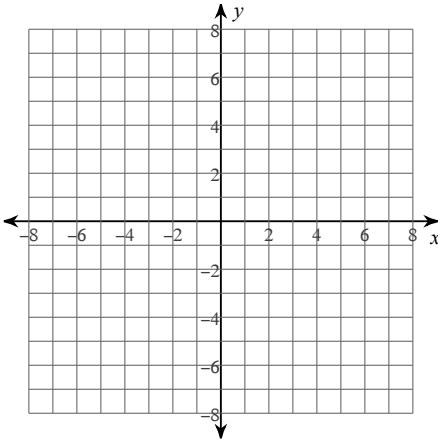
28) Center:  $(\sqrt{19}, -12)$   
Radius:  $\sqrt{43}$

29) Center:  $(-6, 6)$   
Point on Circle:  $(-15, -2)$

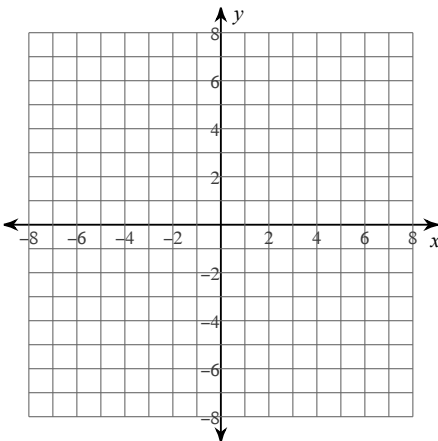
30) Center:  $(9, 14)$   
Point on Circle:  $(6, 14)$

Identify the center, vertices, foci, length of the major axis, length of the minor axis, and eccentricity of each. Then sketch the graph.

$$31) \frac{(x + 3)^2}{4} + \frac{(y - 1)^2}{25} = 1$$



$$32) \frac{(x - 1)^2}{16} + \frac{(y - 4)^2}{4} = 1$$



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

33) Vertices:  $(-1, 1), (-1, -9)$   
 Foci:  $(-1, 0), (-1, -8)$

34) Vertices:  $(11, -10), (-15, -10)$   
 Foci:  $(3, -10), (-7, -10)$

35) Foci:  $(-3 + \sqrt{85}, -9), (-3 - \sqrt{85}, -9)$   
Endpoints of major axis:  $(8, -9), (-14, -9)$

36) Foci:  $(9, 10), (9, -6)$   
Endpoints of major axis:  $(9, 12), (9, -8)$

37)  $x^2 + 4y^2 - 16x + 24y + 84 = 0$

38)  $4x^2 + 25y^2 + 32x + 250y + 289 = 0$

39)  $4x^2 + 9y^2 + 24x - 162y + 189 = 0$

40)  $4x^2 + y^2 - 40x - 16y + 64 = 0$