

Solve each equation for $0 \leq \theta < 2\pi$.

1) $4 = 4 + \frac{1}{2} \cdot \cos \theta$

- A) $\{\frac{\pi}{6}\}$ B) $\{\frac{\pi}{6}, \frac{\pi}{2}, \frac{3\pi}{2}, \frac{11\pi}{6}\}$
 C) $\{\frac{3\pi}{2}\}$ D) $\{\frac{\pi}{2}, \frac{3\pi}{2}\}$

2) $-2 + 4\cos \theta = -2$

- A) $\{\frac{5\pi}{6}\}$ B) $\{\frac{5\pi}{6}, \frac{7\pi}{6}\}$
 C) $\{\frac{\pi}{2}, \frac{3\pi}{2}\}$ D) $\{\frac{\pi}{2}, \frac{7\pi}{6}\}$

Solve each triangle. Round your answers to the nearest tenth.

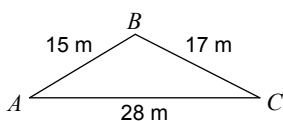
3) $m\angle A = 98^\circ, m\angle B = 38^\circ, a = 37$

- A) $m\angle C = 44^\circ, c = 23, b = 23$
 B) Not a triangle
 C) $m\angle C = 44^\circ, c = 27, b = 23$
 D) $m\angle C = 44^\circ, c = 26, b = 23$

4) $m\angle B = 17^\circ, a = 27, b = 18$

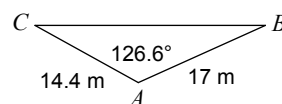
- A) Not a triangle
 B) $m\angle C = 137^\circ, m\angle A = 26^\circ, c = 39$
Or $m\angle C = 9^\circ, m\angle A = 154^\circ, c = 11$
 C) $m\angle C = 137^\circ, m\angle A = 26^\circ, c = 42$
Or $m\angle C = 9^\circ, m\angle A = 154^\circ, c = 9.6$
 D) $m\angle C = 139^\circ, m\angle A = 24^\circ, c = 42$
Or $m\angle C = 7^\circ, m\angle A = 156^\circ, c = 9.6$

5)



- A) $m\angle C = 27^\circ, m\angle A = 31^\circ, m\angle B = 122^\circ$
 B) $m\angle C = 24^\circ, m\angle A = 36^\circ, m\angle B = 120^\circ$
 C) $m\angle C = 20^\circ, m\angle A = 33^\circ, m\angle B = 127^\circ$
 D) $m\angle C = 25^\circ, m\angle A = 33^\circ, m\angle B = 122^\circ$

6)

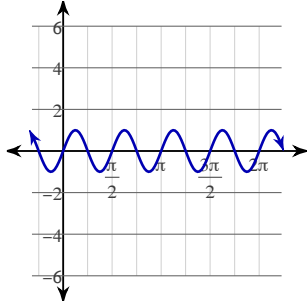


- A) $m\angle B = 28.1^\circ, m\angle C = 25.3^\circ, a = 26.6$ m
 B) $m\angle B = 24.3^\circ, m\angle C = 29.1^\circ, a = 29.9$ m
 C) $m\angle B = 28.1^\circ, m\angle C = 25.3^\circ, a = 28.1$ m
 D) $m\angle B = 24.3^\circ, m\angle C = 29.1^\circ, a = 28.1$ m

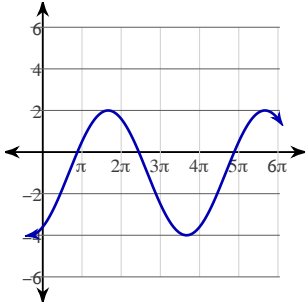
Graph each function using radians.

7) $y = -1 + 3\sin\left(\frac{\theta}{2} - \frac{\pi}{3}\right)$

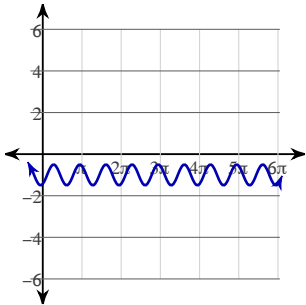
A)



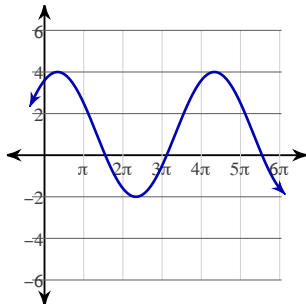
B)



C)

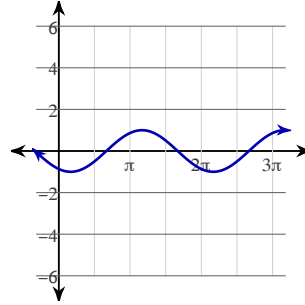


D)

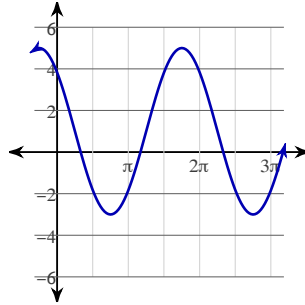


8) $y = 4\sin\left(\theta - \frac{5\pi}{4}\right) + 1$

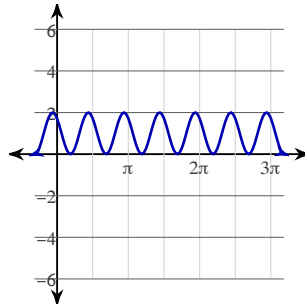
A)



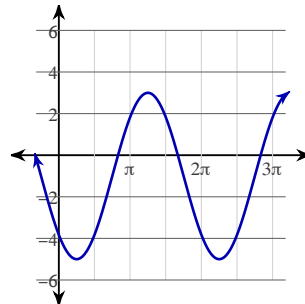
B)



C)



D)



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

9) Center: $(-8, -11)$

Radius: $\sqrt{14}$

A) $(x + 8)^2 + (y + 11)^2 = 14$

B) $(x - 6)^2 + (y - 11)^2 = 14$

C) $(x - 6)^2 + (y - 9)^2 = 14$

D) $(x + 6)^2 + (y - 10)^2 = 14$

10) Center: $\left(\sqrt{119}, \frac{13}{2}\right)$

Radius: 4

A) $\left(x + \frac{13}{2}\right)^2 + (y - \sqrt{119})^2 = 256$

B) $(x + \sqrt{119})^2 + \left(y + \frac{13}{2}\right)^2 = 16$

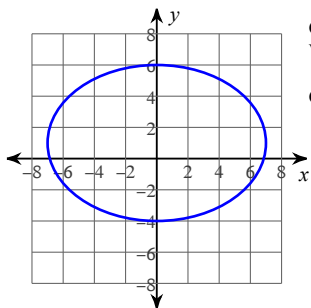
C) $(x - \sqrt{119})^2 + \left(y - \frac{13}{2}\right)^2 = 256$

D) $(x - \sqrt{119})^2 + \left(y - \frac{13}{2}\right)^2 = 16$

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

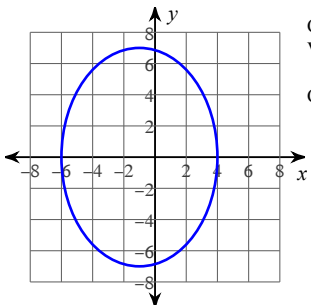
11) $\frac{(x+1)^2}{25} + \frac{y^2}{49} = 1$

A)



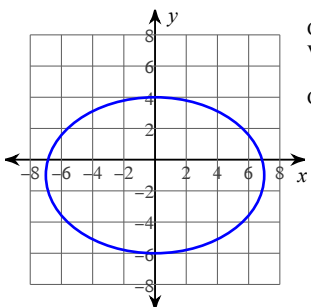
Center: $(-1, 0)$
 Vertices: $(-1, 7)$
 $(-1, -7)$
 Co-vertices: $(4, 0)$
 $(-6, 0)$

B)



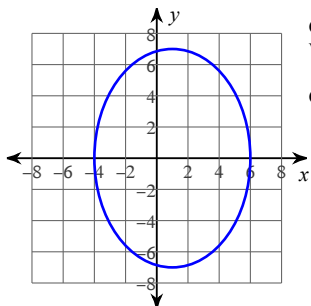
Center: $(0, -1)$
 Vertices: $(7, -1)$
 $(-7, -1)$
 Co-vertices: $(0, 4)$
 $(0, -6)$

C)



Center: $(1, 0)$
 Vertices: $(1, 7)$
 $(1, -7)$
 Co-vertices: $(6, 0)$
 $(-4, 0)$

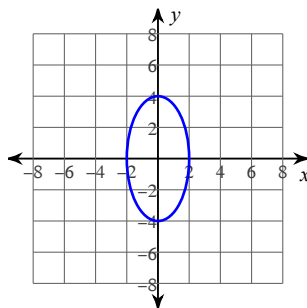
D)



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

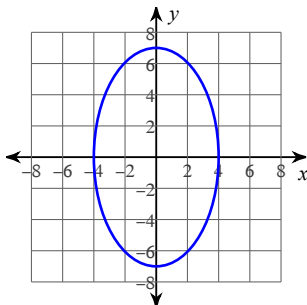
12) $\frac{x^2}{16} + \frac{y^2}{49} = 1$

A)



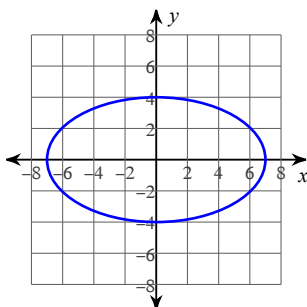
Center: $(0, 0)$
 Vertices: $(0, 7)$
 $(0, -7)$
 Co-vertices: $(4, 0)$
 $(-4, 0)$

B)



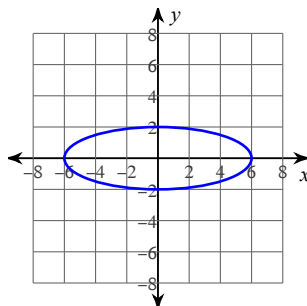
Center: $(0, 0)$
 Vertices: $(7, 0)$
 $(-7, 0)$
 Co-vertices: $(0, 4)$
 $(0, -4)$

C)



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

D)

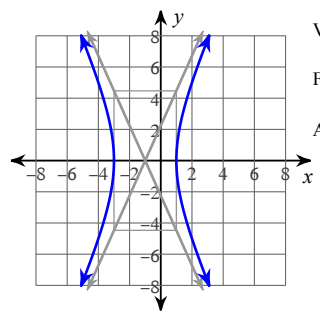


Center: $(0, 0)$
 Vertices: $(7, 0)$
 $(-7, 0)$
 Co-vertices: $(0, 4)$
 $(0, -4)$

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

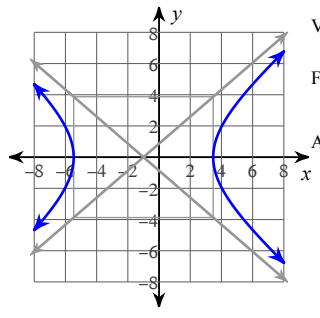
13) $\frac{(x+1)^2}{15} - \frac{y^2}{20} = 1$

A)



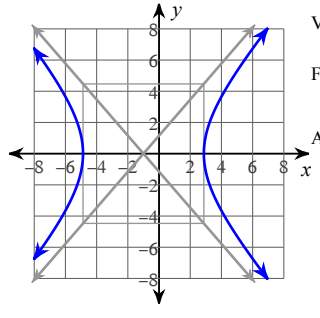
Vertices: $(1, 0)$
 $(-3, 0)$
 Foci: $(-1 + 2\sqrt{6}, 0)$
 $(-1 - 2\sqrt{6}, 0)$
 Asym.: $y = x\sqrt{5} + \sqrt{5}$
 $y = -x\sqrt{5} - \sqrt{5}$

B)



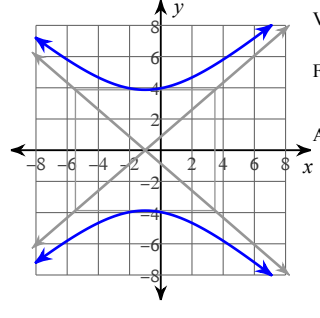
Vertices: $(-1 + 2\sqrt{5}, 0)$
 $(-1 - 2\sqrt{5}, 0)$
 Foci: $(-1 + \sqrt{35}, 0)$
 $(-1 - \sqrt{35}, 0)$
 Asym.: $y = \frac{x\sqrt{3}}{2} + \frac{\sqrt{3}}{2}$
 $y = -\frac{x\sqrt{3}}{2} - \frac{\sqrt{3}}{2}$

C)



Vertices: $(-1 + \sqrt{15}, 0)$
 $(-1 - \sqrt{15}, 0)$
 Foci: $(-1 + \sqrt{35}, 0)$
 $(-1 - \sqrt{35}, 0)$
 Asym.: $y = \frac{2x\sqrt{3}}{3} + \frac{2\sqrt{3}}{3}$
 $y = -\frac{2x\sqrt{3}}{3} - \frac{2\sqrt{3}}{3}$

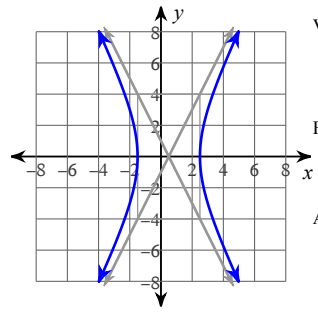
D)



Vertices: $(-1, \sqrt{15})$
 $(-1, -\sqrt{15})$
 Foci: $(-1, \sqrt{35})$
 $(-1, -\sqrt{35})$
 Asym.: $y = \frac{x\sqrt{3}}{2} + \frac{\sqrt{3}}{2}$
 $y = -\frac{x\sqrt{3}}{2} - \frac{\sqrt{3}}{2}$

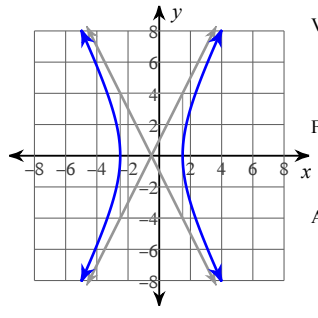
14) $\frac{(x-\frac{1}{2})^2}{4} - \frac{y^2}{16} = 1$

A)



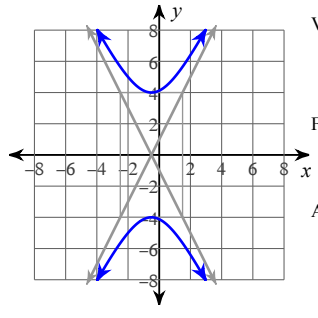
Vertices: $(\frac{5}{2}, 0)$
 $(-\frac{3}{2}, 0)$
 Foci: $(\frac{4\sqrt{5}+1}{2}, 0)$
 $(\frac{-4\sqrt{5}+1}{2}, 0)$
 Asym.: $y = 2x - 1$
 $y = -2x + 1$

B)



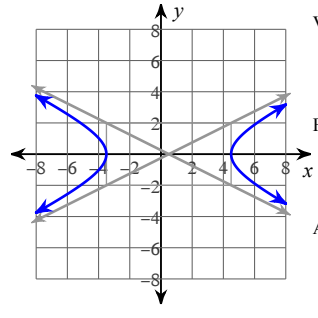
Vertices: $(\frac{3}{2}, 0)$
 $(-\frac{5}{2}, 0)$
 Foci: $(\frac{4\sqrt{5}-1}{2}, 0)$
 $(\frac{-4\sqrt{5}-1}{2}, 0)$
 Asym.: $y = 2x + 1$
 $y = -2x - 1$

C)



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

D)

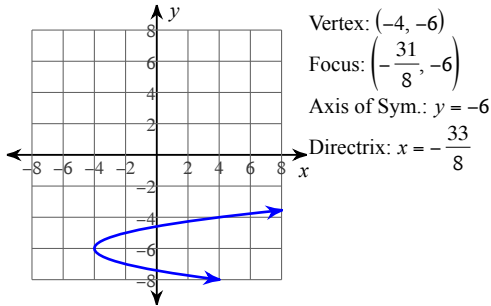


Vertices: $(\frac{9}{2}, 0)$
 $(-\frac{7}{2}, 0)$
 Foci: $(\frac{4\sqrt{5}+1}{2}, 0)$
 $(\frac{-4\sqrt{5}+1}{2}, 0)$
 Asym.: $y = \frac{1}{2}x - \frac{1}{4}$
 $y = -\frac{1}{2}x + \frac{1}{4}$

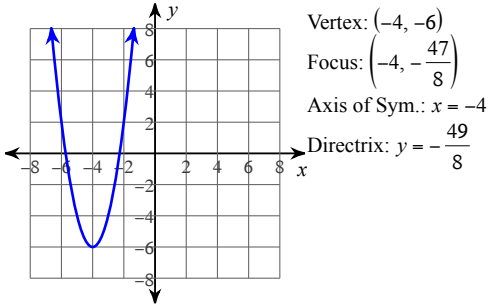
Identify the vertex, focus, axis of symmetry, and directrix of each. Then sketch the graph.

15) $-2x^2 - 16x + y - 26 = 0$

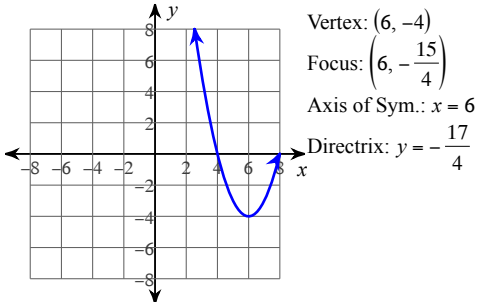
A)



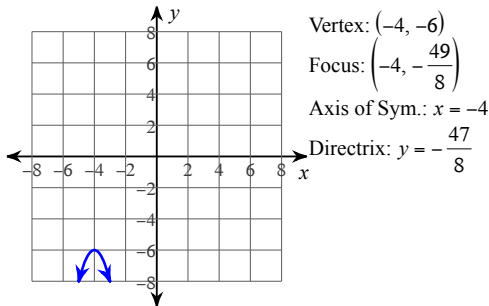
B)



C)

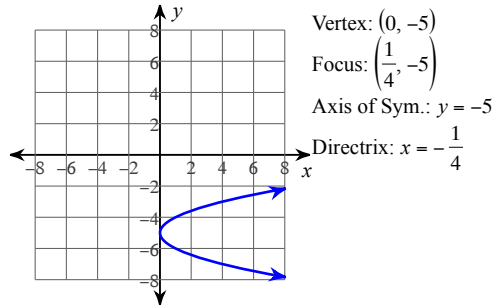


D)

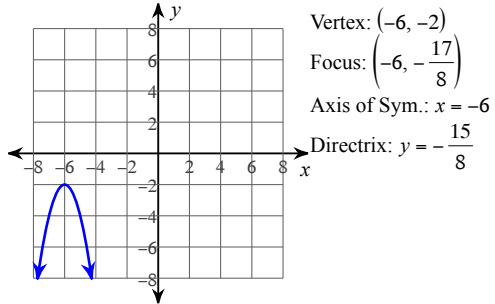


16) $2x^2 + 24x + y + 74 = 0$

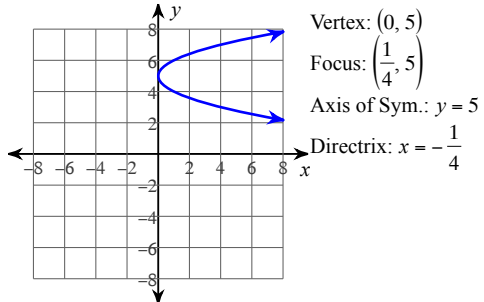
A)



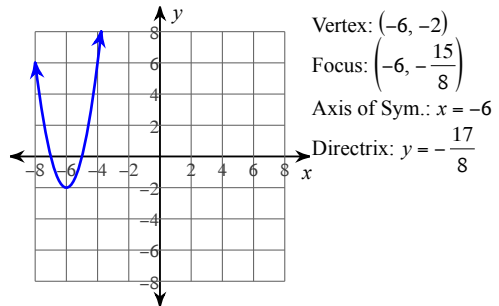
B)



C)



D)



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

17) Vertex: $(-8, 4)$, Focus: $(-8, \frac{15}{4})$

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

B) $y - 2 = (x + 10)^2$

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

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

18) Vertex: $(7, 0)$, Focus: $\left(\frac{55}{8}, 0\right)$

A) $2(x - 7) = y^2$

B) $\frac{1}{2}(x + 7) = y^2$

C) $-\frac{1}{2}(x - 7) = y^2$

D) $-\frac{1}{2}y = (x - 7)^2$

Solve each equation for $0 \leq \theta < 2\pi$.

1) $4 = 4 + \frac{1}{2} \cdot \cos \theta$

- A) $\{\frac{\pi}{6}\}$ B) $\{\frac{\pi}{6}, \frac{\pi}{2}, \frac{3\pi}{2}, \frac{11\pi}{6}\}$
 C) $\{\frac{3\pi}{2}\}$ *D) $\{\frac{\pi}{2}, \frac{3\pi}{2}\}$

2) $-2 + 4\cos \theta = -2$

- A) $\{\frac{5\pi}{6}\}$ B) $\{\frac{5\pi}{6}, \frac{7\pi}{6}\}$
 *C) $\{\frac{\pi}{2}, \frac{3\pi}{2}\}$ D) $\{\frac{\pi}{2}, \frac{7\pi}{6}\}$

Solve each triangle. Round your answers to the nearest tenth.

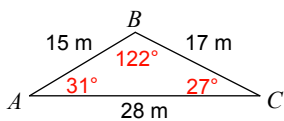
3) $m\angle A = 98^\circ, m\angle B = 38^\circ, a = 37$

- A) $m\angle C = 44^\circ, c = 23, b = 23$
 B) Not a triangle
 C) $m\angle C = 44^\circ, c = 27, b = 23$
 *D) $m\angle C = 44^\circ, c = 26, b = 23$

4) $m\angle B = 17^\circ, a = 27, b = 18$

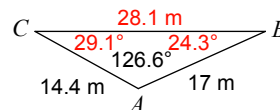
- A) Not a triangle
 B) $m\angle C = 137^\circ, m\angle A = 26^\circ, c = 39$
 Or $m\angle C = 9^\circ, m\angle A = 154^\circ, c = 11$
 *C) $m\angle C = 137^\circ, m\angle A = 26^\circ, c = 42$
 Or $m\angle C = 9^\circ, m\angle A = 154^\circ, c = 9.6$
 D) $m\angle C = 139^\circ, m\angle A = 24^\circ, c = 42$
 Or $m\angle C = 7^\circ, m\angle A = 156^\circ, c = 9.6$

5)



- *A) $m\angle C = 27^\circ, m\angle A = 31^\circ, m\angle B = 122^\circ$
 B) $m\angle C = 24^\circ, m\angle A = 36^\circ, m\angle B = 120^\circ$
 C) $m\angle C = 20^\circ, m\angle A = 33^\circ, m\angle B = 127^\circ$
 D) $m\angle C = 25^\circ, m\angle A = 33^\circ, m\angle B = 122^\circ$

6)

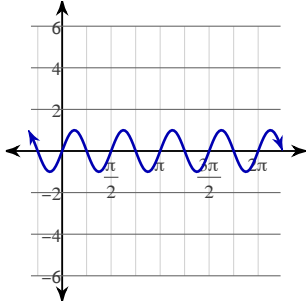


- A) $m\angle B = 28.1^\circ, m\angle C = 25.3^\circ, a = 26.6$ m
 B) $m\angle B = 24.3^\circ, m\angle C = 29.1^\circ, a = 29.9$ m
 C) $m\angle B = 28.1^\circ, m\angle C = 25.3^\circ, a = 28.1$ m
 *D) $m\angle B = 24.3^\circ, m\angle C = 29.1^\circ, a = 28.1$ m

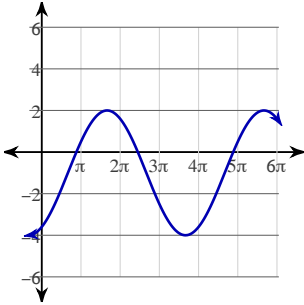
Graph each function using radians.

7) $y = -1 + 3\sin\left(\frac{\theta}{2} - \frac{\pi}{3}\right)$

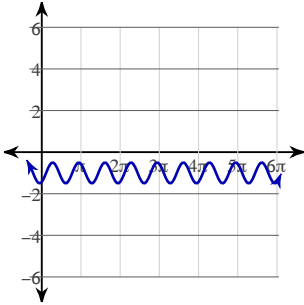
A)



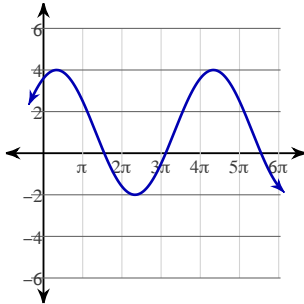
*B)



C)

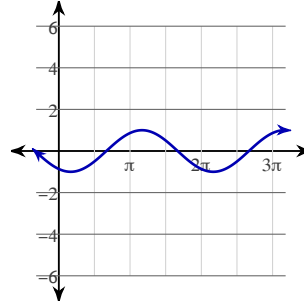


D)

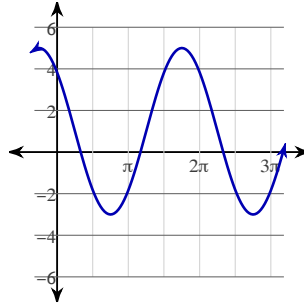


8) $y = 4\sin\left(\theta - \frac{5\pi}{4}\right) + 1$

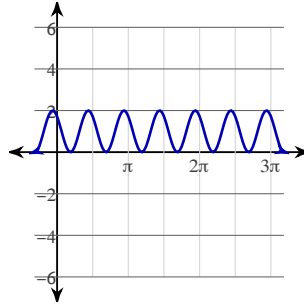
A)



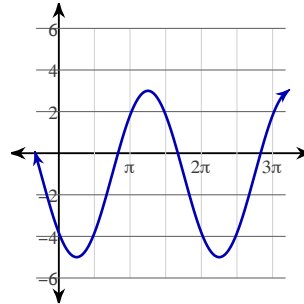
*B)



C)



D)



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

9) Center: $(-8, -11)$

Radius: $\sqrt{14}$

*A) $(x + 8)^2 + (y + 11)^2 = 14$

B) $(x - 6)^2 + (y - 11)^2 = 14$

C) $(x - 6)^2 + (y - 9)^2 = 14$

D) $(x + 6)^2 + (y - 10)^2 = 14$

10) Center: $\left(\sqrt{119}, \frac{13}{2}\right)$

Radius: 4

A) $\left(x + \frac{13}{2}\right)^2 + (y - \sqrt{119})^2 = 256$

B) $(x + \sqrt{119})^2 + \left(y + \frac{13}{2}\right)^2 = 16$

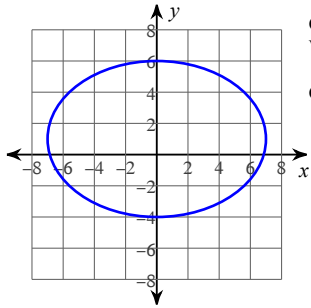
C) $(x - \sqrt{119})^2 + \left(y - \frac{13}{2}\right)^2 = 256$

*D) $(x - \sqrt{119})^2 + \left(y - \frac{13}{2}\right)^2 = 16$

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

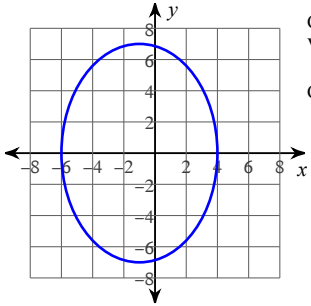
11) $\frac{(x+1)^2}{25} + \frac{y^2}{49} = 1$

A)



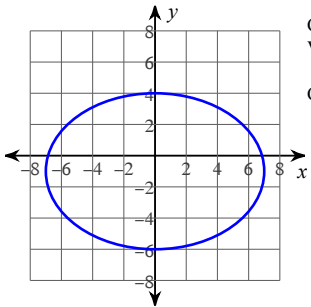
Center: (0, 1)
 Vertices: (7, 1)
 (-7, 1)
 Co-vertices: (0, 6)
 (0, -4)

*B)



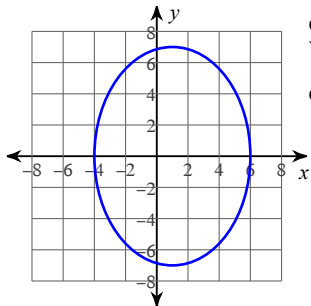
Center: (-1, 0)
 Vertices: (-1, 7)
 (-1, -7)
 Co-vertices: (4, 0)
 (-6, 0)

C)



Center: (0, -1)
 Vertices: (7, -1)
 (-7, -1)
 Co-vertices: (0, 4)
 (0, -6)

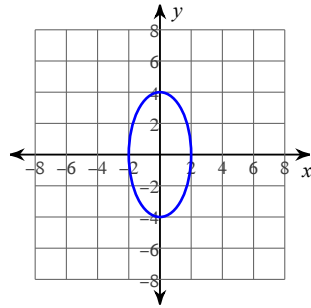
D)



Center: (1, 0)
 Vertices: (1, 7)
 (1, -7)
 Co-vertices: (6, 0)
 (-4, 0)

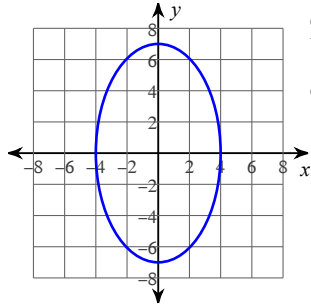
12) $\frac{x^2}{16} + \frac{y^2}{49} = 1$

A)



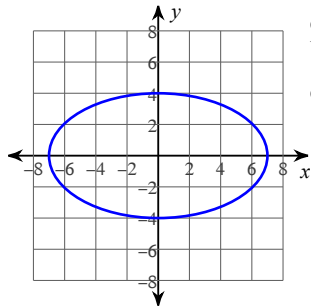
Center: (0, 0)
 Vertices: (0, 4)
 (0, -4)
 Co-vertices: (2, 0)
 (-2, 0)

*B)



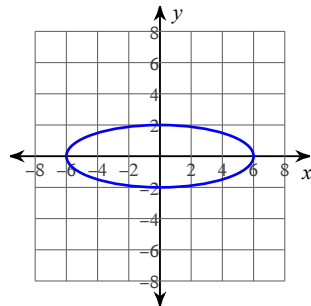
Center: (0, 0)
 Vertices: (0, 7)
 (0, -7)
 Co-vertices: (4, 0)
 (-4, 0)

C)



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

D)

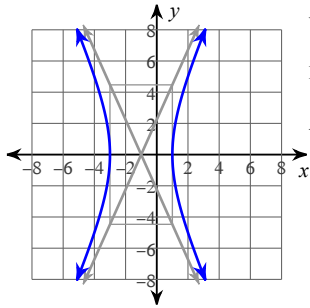


Center: (0, 0)
 Vertices: (6, 0)
 (-6, 0)
 Co-vertices: (0, 2)
 (0, -2)

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

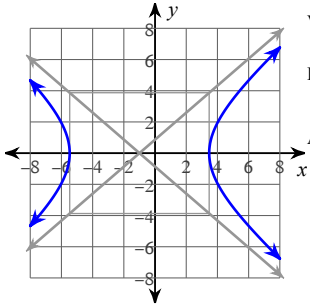
$$13) \frac{(x+1)^2}{15} - \frac{y^2}{20} = 1$$

A)



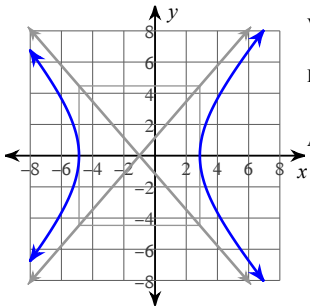
Vertices: $(-3, 0)$
 $(1, 0)$
 Foci: $(-1 + 2\sqrt{5}, 0)$
 $(-1 - 2\sqrt{5}, 0)$
 Asym.: $y = x\sqrt{5} + \sqrt{5}$
 $y = -x\sqrt{5} - \sqrt{5}$

B)



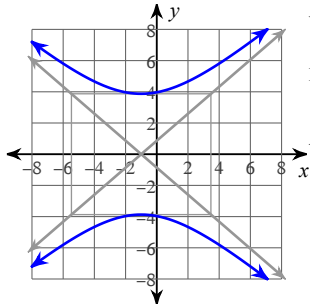
Vertices: $(-1 + 2\sqrt{5}, 0)$
 $(-1 - 2\sqrt{5}, 0)$
 Foci: $(-1 + \sqrt{35}, 0)$
 $(-1 - \sqrt{35}, 0)$
 Asym.: $y = \frac{x\sqrt{3}}{2} + \frac{\sqrt{3}}{2}$
 $y = -\frac{x\sqrt{3}}{2} - \frac{\sqrt{3}}{2}$

*C)



Vertices: $(-1 + \sqrt{15}, 0)$
 $(-1 - \sqrt{15}, 0)$
 Foci: $(-1 + \sqrt{35}, 0)$
 $(-1 - \sqrt{35}, 0)$
 Asym.: $y = \frac{2x\sqrt{3}}{3} + \frac{2\sqrt{3}}{3}$
 $y = -\frac{2x\sqrt{3}}{3} - \frac{2\sqrt{3}}{3}$

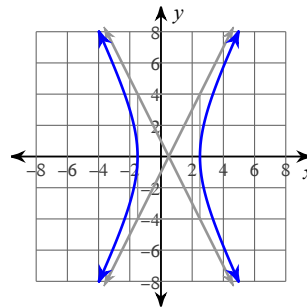
D)



Vertices: $(-1, \sqrt{15})$
 $(-1, -\sqrt{15})$
 Foci: $(-1, \sqrt{35})$
 $(-1, -\sqrt{35})$
 Asym.: $y = \frac{x\sqrt{3}}{2} + \frac{\sqrt{3}}{2}$
 $y = -\frac{x\sqrt{3}}{2} - \frac{\sqrt{3}}{2}$

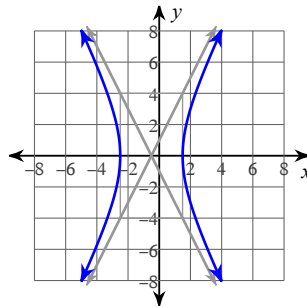
$$14) \frac{(x-\frac{1}{2})^2}{4} - \frac{y^2}{16} = 1$$

*A)



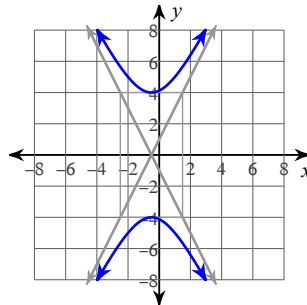
Vertices: $(\frac{5}{2}, 0)$
 $(-\frac{3}{2}, 0)$
 Foci: $(\frac{4\sqrt{5}+1}{2}, 0)$
 $(\frac{-4\sqrt{5}+1}{2}, 0)$
 Asym.: $y = 2x - 1$
 $y = -2x + 1$

B)



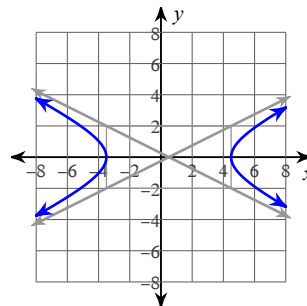
Vertices: $(\frac{3}{2}, 0)$
 $(-\frac{5}{2}, 0)$
 Foci: $(\frac{4\sqrt{5}-1}{2}, 0)$
 $(\frac{-4\sqrt{5}-1}{2}, 0)$
 Asym.: $y = 2x + 1$
 $y = -2x - 1$

C)



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

D)

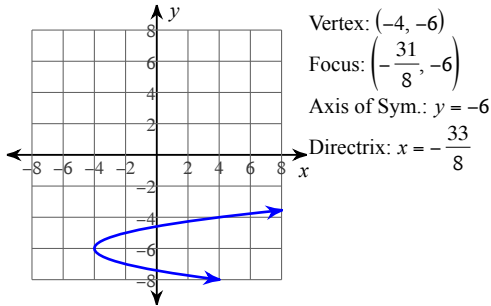


Vertices: $(\frac{9}{2}, 0)$
 $(-\frac{7}{2}, 0)$
 Foci: $(\frac{4\sqrt{5}+1}{2}, 0)$
 $(\frac{-4\sqrt{5}+1}{2}, 0)$
 Asym.: $y = \frac{1}{2}x - \frac{1}{4}$
 $y = -\frac{1}{2}x + \frac{1}{4}$

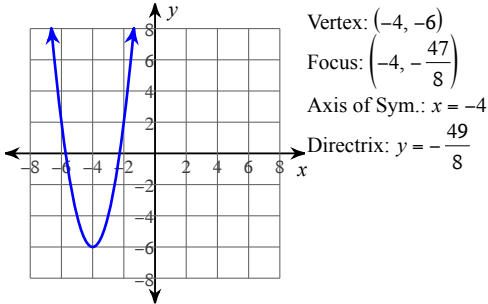
Identify the vertex, focus, axis of symmetry, and directrix of each. Then sketch the graph.

15) $-2x^2 - 16x + y - 26 = 0$

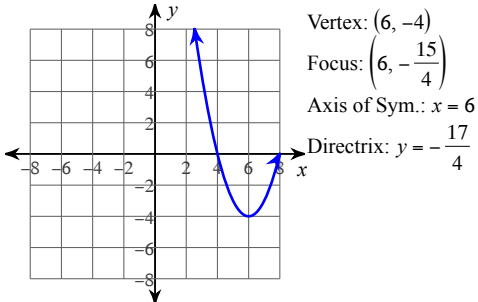
A)



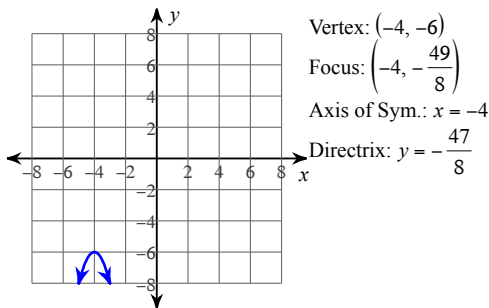
*B)



C)

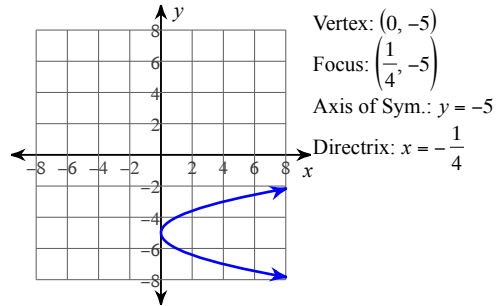


D)

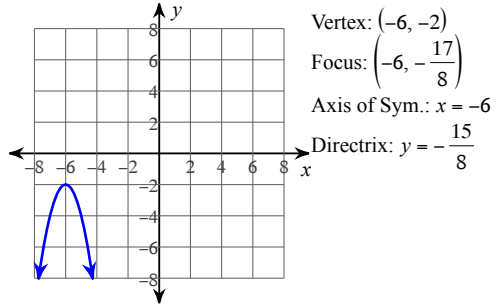


16) $2x^2 + 24x + y + 74 = 0$

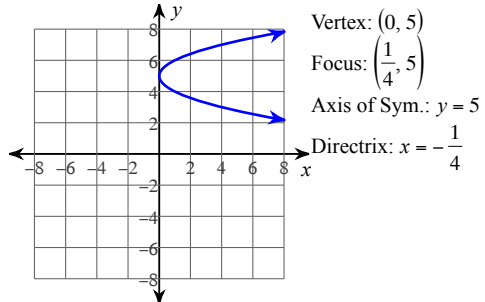
A)



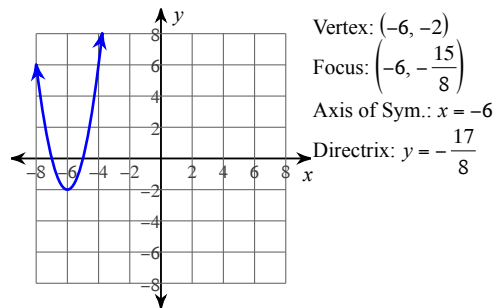
*B)



C)



D)



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

17) Vertex: $(-8, 4)$, Focus: $(-8, \frac{15}{4})$

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

B) $y - 2 = (x + 10)^2$

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

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

18) Vertex: $(7, 0)$, Focus: $\left(\frac{55}{8}, 0\right)$

A) $2(x - 7) = y^2$

B) $\frac{1}{2}(x + 7) = y^2$

*C) $-\frac{1}{2}(x - 7) = y^2$

D) $-\frac{1}{2}y = (x - 7)^2$