

Conic Sections Review Worksheet

Date _____ Period _____

© 2012 Kuta Software LLC. All rights reserved.

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

1) Center: $(6, -8)$
 Point on Circle: $(14, -14)$

2) Center: $(4, 12)$
 Point on Circle: $(11, 12)$

3) Center: $(9, 6)$
 Point on Circle: $(9, 7)$

4) Three points on the circle:
 $(4, -7)$, $(-16, 5)$, and $(4, 5)$

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

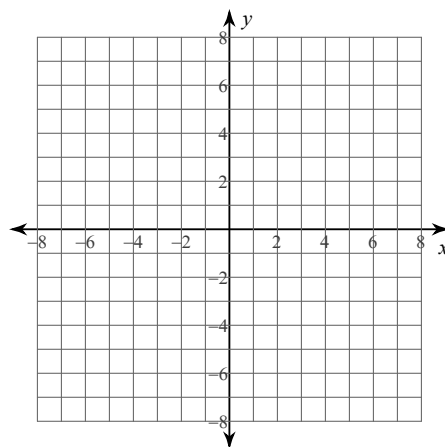
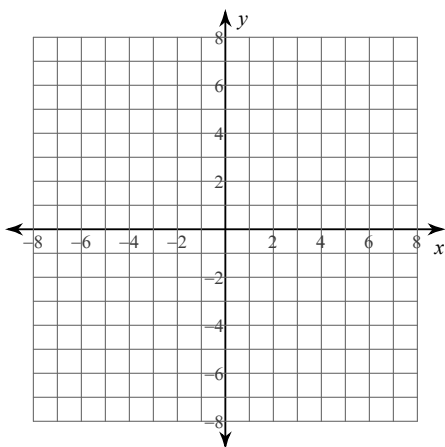
5) Center: $(11, -2)$
 Point on Circle: $(19, -2)$

6) Three points on the circle:
 $(12, -18)$, $(4, -12)$, and $(11, -19)$

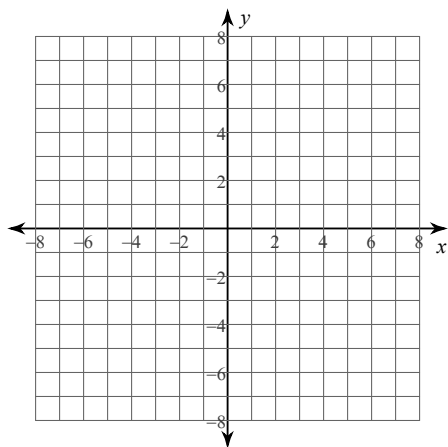
Identify the center and radius of each. Then sketch the graph.

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

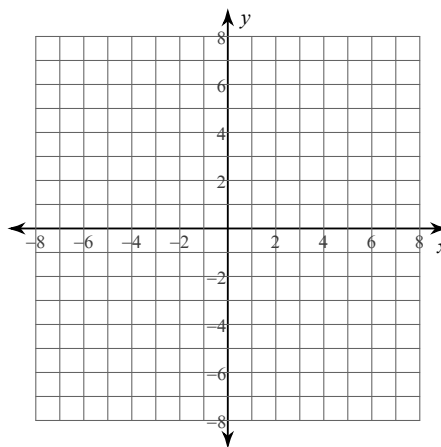
8) $(x - 3)^2 + (y - 3)^2 = 9$



9) $x^2 = -4x + 4 + 2y - y^2$



10) $1 + x^2 + 6x - 2y = -y^2$



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

11) Vertices: $(3, 13), (3, -7)$
 Foci: $(3, 9), (3, -3)$

12) Vertices: $(-5, 6), (-5, -14)$
 Foci: $(-5, -4 + \sqrt{91}), (-5, -4 - \sqrt{91})$

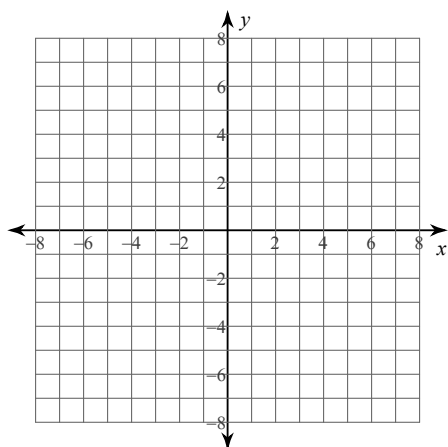
13) Vertices: $(5, 5), (-21, 5)$
 Foci: $(-8 + \sqrt{105}, 5), (-8 - \sqrt{105}, 5)$

14) Vertices: $(-4 + \sqrt{115}, 6), (-4 - \sqrt{115}, 6)$
 Foci: $(-4 + \sqrt{55}, 6), (-4 - \sqrt{55}, 6)$

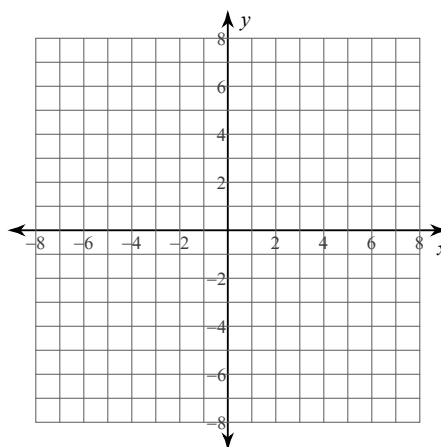
15) Vertices: $(0, 3), (-18, 3)$
 Foci: $(-9 + \sqrt{65}, 3), (-9 - \sqrt{65}, 3)$

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

16) $4x^2 + 25y^2 - 16x - 250y + 541 = 0$



17) $4x^2 + 25y^2 - 16x + 150y + 141 = 0$



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

18) Vertices: $(6, 9), (-6, 9)$
Conjugate Axis is 26 units long

19) Vertices: $(17, 3), (-1, 3)$
Conjugate Axis is 10 units long

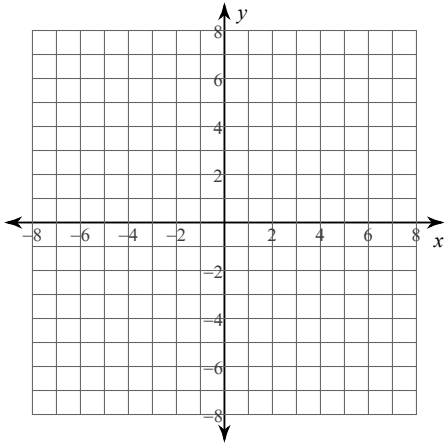
20) Foci: $(8 + 5\sqrt{11}, -5), (8 - 5\sqrt{11}, -5)$
Asymptotes: $y = \frac{x\sqrt{754}}{29} - 5 - \frac{8\sqrt{754}}{29}$
 $y = -\frac{x\sqrt{754}}{29} - 5 + \frac{8\sqrt{754}}{29}$

21) Foci: $(5 + 3\sqrt{2}, -9), (5 - 3\sqrt{2}, -9)$
Asymptotes: $y = x - 14$
 $y = -x - 4$

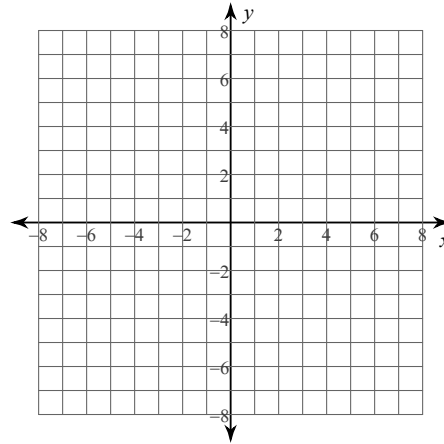
22) Foci: $(-4 + \sqrt{221}, 10), (-4 - \sqrt{221}, 10)$
Asymptotes: $y = \frac{10}{11}x + \frac{150}{11}$
 $y = -\frac{10}{11}x + \frac{70}{11}$

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

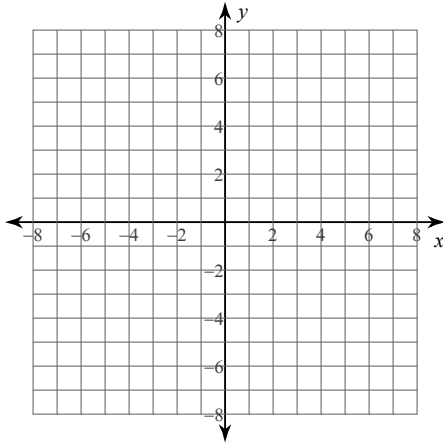
$$23) \frac{(x-1)^2}{16} - \frac{y^2}{25} = 1$$



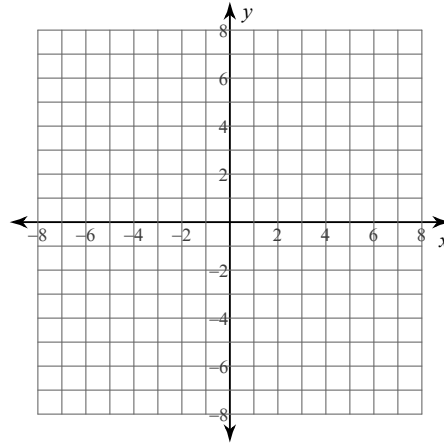
$$24) \frac{x^2}{25} - \frac{y^2}{25} = 1$$



$$25) 25x^2 - y^2 - 50x = 0$$



$$26) x^2 - 25y^2 + 200y - 425 = 0$$



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

$$27) \text{Vertex: } (9, 9), \text{Directrix: } y = \frac{71}{8}$$

$$28) \text{Vertex: } (5, -2), \text{Directrix: } x = \frac{11}{2}$$

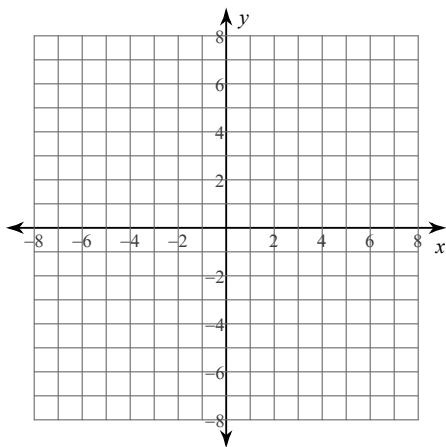
$$29) \text{Vertex: } (-1, -9), \text{Directrix: } y = -\frac{37}{4}$$

$$30) \text{Vertex: } (6, -9), \text{Directrix: } y = -\frac{143}{16}$$

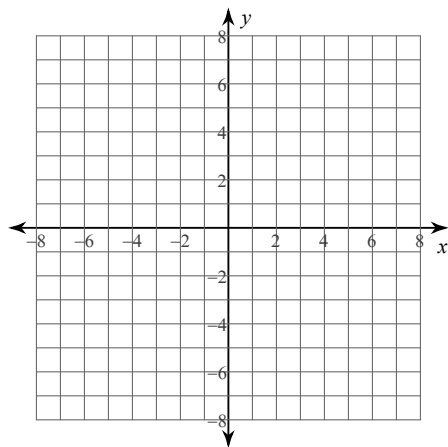
$$31) \text{Vertex: } (8, -3), \text{Directrix: } y = -\frac{21}{8}$$

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

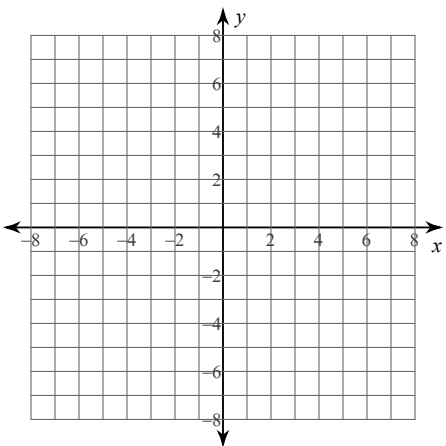
32) $y = -(x + 2)^2 - 6$



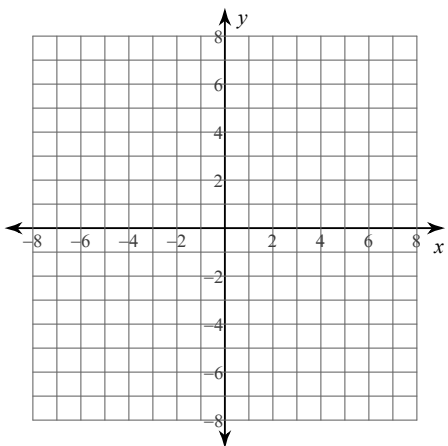
33) $y = -2(x + 6)^2 - 1$



34) $y = x^2 + 2x - 2$



35) $y = -\frac{1}{3}x^2 - \frac{2}{3}x + \frac{17}{3}$



Conic Sections Review Worksheet

© 2012 Kuta Software LLC. All rights reserved.

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

1) Center: (6, -8)
 Point on Circle: (14, -14)
 $(x - 6)^2 + (y + 8)^2 = 100$

2) Center: (4, 12)
 Point on Circle: (11, 12)
 $(x - 4)^2 + (y - 12)^2 = 49$

3) Center: (9, 6)
 Point on Circle: (9, 7)
 $(x - 9)^2 + (y - 6)^2 = 1$

4) Three points on the circle:
 (4, -7), (-16, 5), and (4, 5)
 $(x + 6)^2 + (y + 1)^2 = 136$

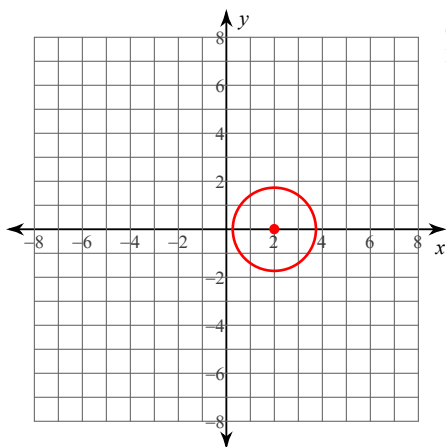
Use the information provided to write the general conic form equation of each circle.

5) Center: (11, -2)
 Point on Circle: (19, -2)
 $x^2 + y^2 - 22x + 4y + 61 = 0$

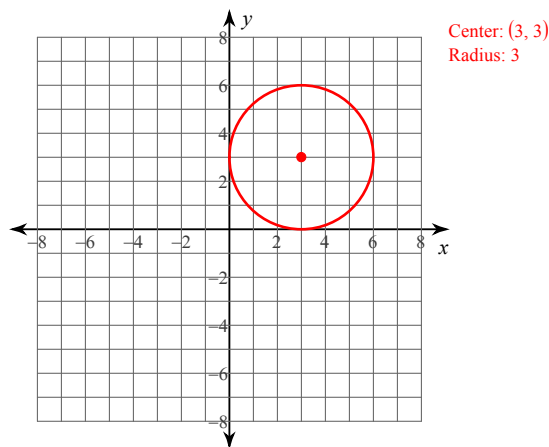
6) Three points on the circle:
 (12, -18), (4, -12), and (11, -19)
 $x^2 + y^2 - 16x + 30y + 264 = 0$

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

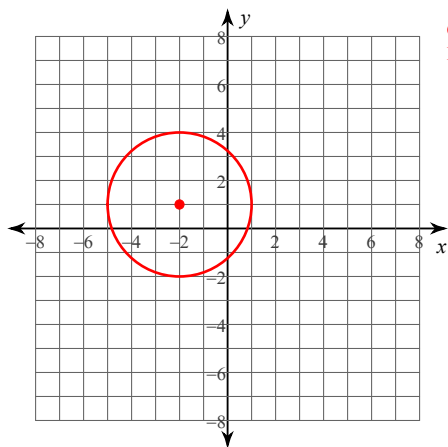
7) $(x - 2)^2 + y^2 = 3$



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

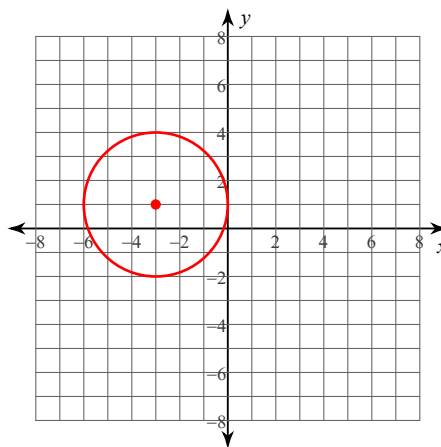


$$9) x^2 = -4x + 4 + 2y - y^2$$



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

$$10) 1 + x^2 + 6x - 2y = -y^2$$



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

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

- 11) Vertices: $(3, 13), (3, -7)$
Foci: $(3, 9), (3, -3)$

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

- 12) Vertices: $(-5, 6), (-5, -14)$
Foci: $(-5, -4 + \sqrt{91}), (-5, -4 - \sqrt{91})$

$$\frac{(x+5)^2}{9} + \frac{(y+4)^2}{100} = 1$$

- 13) Vertices: $(5, 5), (-21, 5)$
Foci: $(-8 + \sqrt{105}, 5), (-8 - \sqrt{105}, 5)$

$$\frac{(x+8)^2}{169} + \frac{(y-5)^2}{64} = 1$$

- 14) Vertices: $(-4 + \sqrt{115}, 6), (-4 - \sqrt{115}, 6)$
Foci: $(-4 + \sqrt{55}, 6), (-4 - \sqrt{55}, 6)$

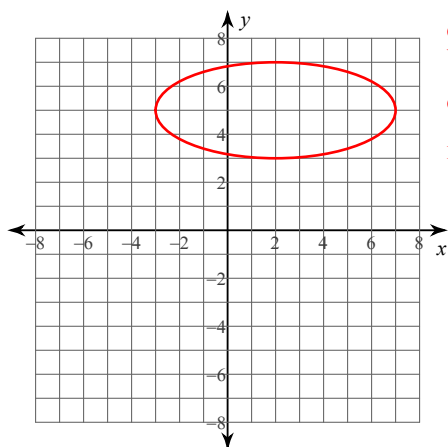
$$\frac{(x+4)^2}{115} + \frac{(y-6)^2}{60} = 1$$

- 15) Vertices: $(0, 3), (-18, 3)$
Foci: $(-9 + \sqrt{65}, 3), (-9 - \sqrt{65}, 3)$

$$\frac{(x+9)^2}{81} + \frac{(y-3)^2}{16} = 1$$

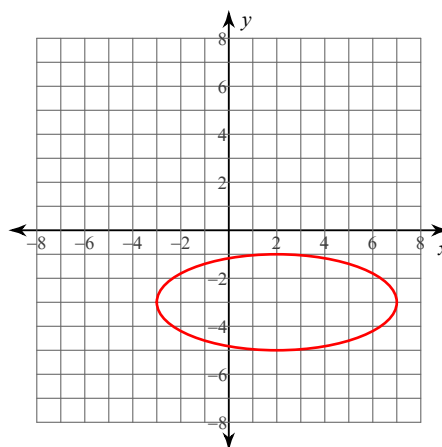
Identify the center, vertices, co-vertices, and foci of each. Then sketch the graph.

16) $4x^2 + 25y^2 - 16x - 250y + 541 = 0$



Center: (2, 5)
 Vertices: (7, 5)
 (-3, 5)
 Co-vertices: (2, 7)
 (2, 3)
 Foci: $(2 + \sqrt{21}, 5)$
 $(2 - \sqrt{21}, 5)$

17) $4x^2 + 25y^2 - 16x + 150y + 141 = 0$



Center: (2, -3)
 Vertices: (7, -3)
 (-3, -3)
 Co-vertices: (2, -1)
 (2, -5)
 Foci: $(2 + \sqrt{21}, -3)$
 $(2 - \sqrt{21}, -3)$

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

18) Vertices: (6, 9), (-6, 9)
 Conjugate Axis is 26 units long

$$\frac{x^2}{36} - \frac{(y-9)^2}{169} = 1$$

19) Vertices: (17, 3), (-1, 3)
 Conjugate Axis is 10 units long

$$\frac{(x-8)^2}{81} - \frac{(y-3)^2}{25} = 1$$

20) Foci: $(8 + 5\sqrt{11}, -5)$, $(8 - 5\sqrt{11}, -5)$
 Asymptotes: $y = \frac{x\sqrt{754}}{29} - 5 - \frac{8\sqrt{754}}{29}$
 $y = -\frac{x\sqrt{754}}{29} - 5 + \frac{8\sqrt{754}}{29}$

$$\frac{(x-8)^2}{145} - \frac{(y+5)^2}{130} = 1$$

21) Foci: $(5 + 3\sqrt{2}, -9)$, $(5 - 3\sqrt{2}, -9)$
 Asymptotes: $y = x - 14$
 $y = -x - 4$

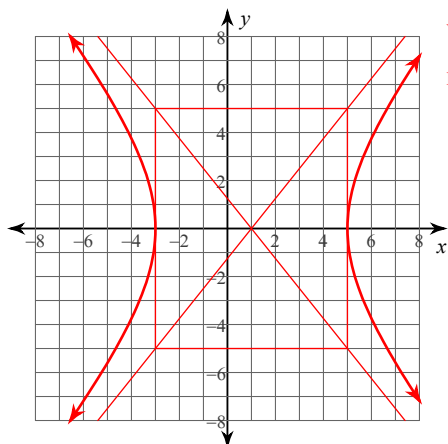
$$\frac{(x-5)^2}{9} - \frac{(y+9)^2}{9} = 1$$

22) Foci: $(-4 + \sqrt{221}, 10)$, $(-4 - \sqrt{221}, 10)$
 Asymptotes: $y = \frac{10}{11}x + \frac{150}{11}$
 $y = -\frac{10}{11}x + \frac{70}{11}$

$$\frac{(x+4)^2}{121} - \frac{(y-10)^2}{100} = 1$$

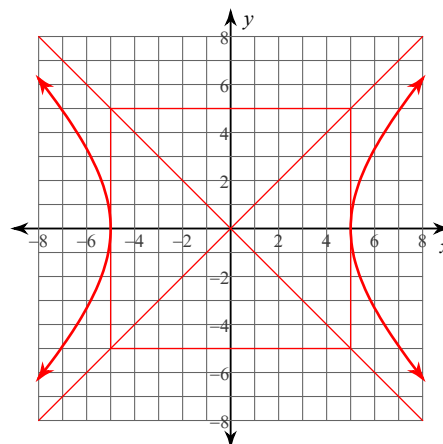
Identify the vertices and foci of each. Then sketch the graph.

$$23) \frac{(x-1)^2}{16} - \frac{y^2}{25} = 1$$



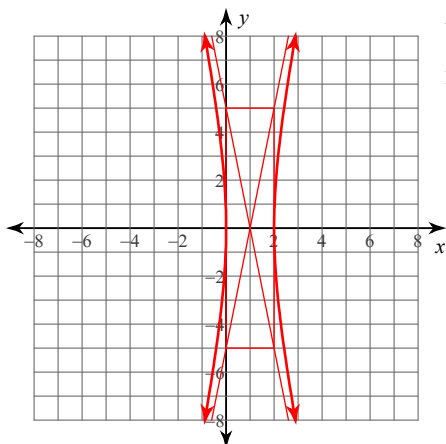
Vertices: $(5, 0)$
 $(-3, 0)$
 Foci: $(1 + \sqrt{41}, 0)$
 $(1 - \sqrt{41}, 0)$

$$24) \frac{x^2}{25} - \frac{y^2}{25} = 1$$



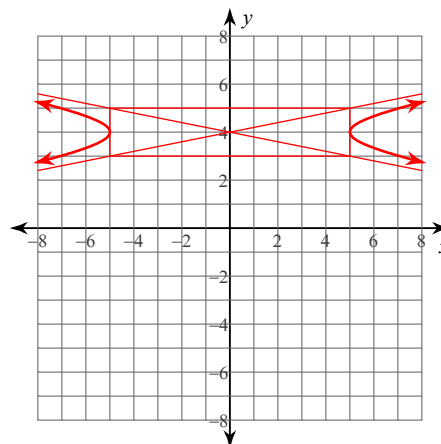
Vertices: $(5, 0)$
 $(-5, 0)$
 Foci: $(5\sqrt{2}, 0)$
 $(-5\sqrt{2}, 0)$

$$25) 25x^2 - y^2 - 50x = 0$$



Vertices: $(2, 0)$
 $(0, 0)$
 Foci: $(1 + \sqrt{26}, 0)$
 $(1 - \sqrt{26}, 0)$

$$26) x^2 - 25y^2 + 200y - 425 = 0$$



Vertices: $(5, 4)$
 $(-5, 4)$
 Foci: $(\sqrt{26}, 4)$
 $(-\sqrt{26}, 4)$

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

$$27) \text{Vertex: } (9, 9), \text{Directrix: } y = \frac{71}{8}$$

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

$$28) \text{Vertex: } (5, -2), \text{Directrix: } x = \frac{11}{2}$$

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

$$29) \text{Vertex: } (-1, -9), \text{Directrix: } y = -\frac{37}{4}$$

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

$$30) \text{Vertex: } (6, -9), \text{Directrix: } y = -\frac{143}{16}$$

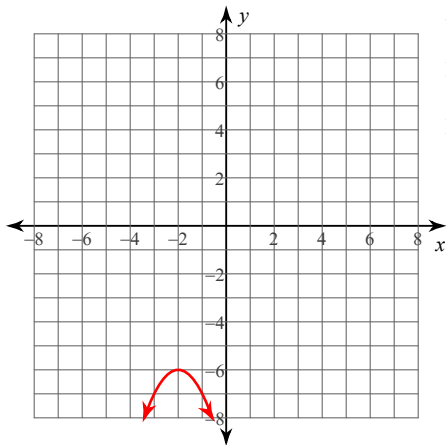
$$y = -4(x - 6)^2 - 9$$

$$31) \text{Vertex: } (8, -3), \text{Directrix: } y = -\frac{21}{8}$$

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

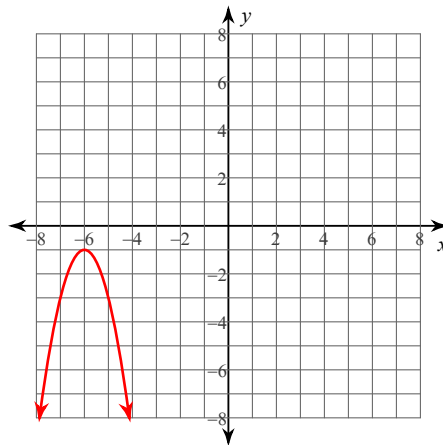
Identify the vertex, focus, and directrix of each. Then sketch the graph.

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



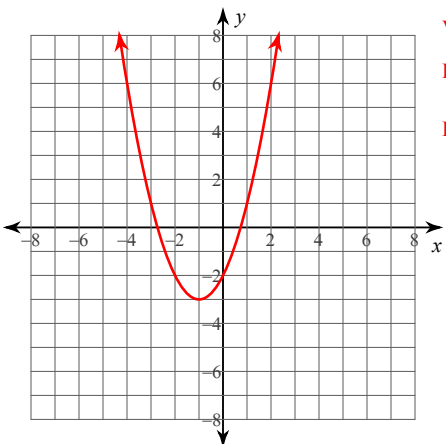
Vertex: $(-2, -6)$
 Focus: $(-2, -\frac{25}{4})$
 Directrix: $y = -\frac{23}{4}$

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



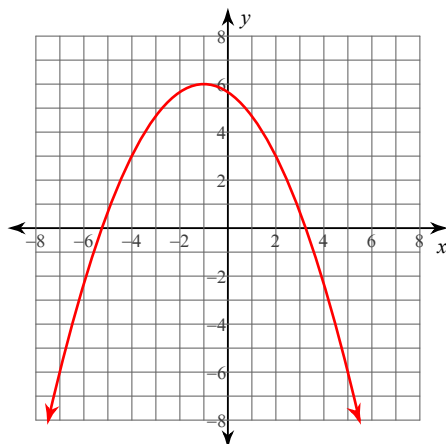
Vertex: $(-6, -1)$
 Focus: $(-6, -\frac{9}{8})$
 Directrix: $y = -\frac{7}{8}$

34) $y = x^2 + 2x - 2$



Vertex: $(-1, -3)$
 Focus: $(-1, -\frac{11}{4})$
 Directrix: $y = -\frac{13}{4}$

35) $y = -\frac{1}{3}x^2 - \frac{2}{3}x + \frac{17}{3}$



Vertex: $(-1, 6)$
 Focus: $(-1, \frac{21}{4})$
 Directrix: $y = \frac{27}{4}$