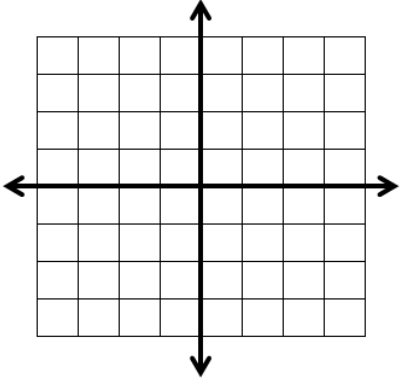


# 11 Review – Conic Sections

## Algebra Skills:

1. Graph  $f(x) = -(x + 1)^2 + 2$ .



2. Multiply.

a.  $(1 + \sqrt{2})(2 - \sqrt{2})$

b.  $(1 + \sqrt{x})(2 - \sqrt{2})$

3. Solve by factoring.

a.  $x^3 - 9x = 0$

b.  $4x^2 + 24x + 36 = 0$

4. Sketch the graph of  $(y + 1)^2 = -8(x - 4)$  and identify the given information.

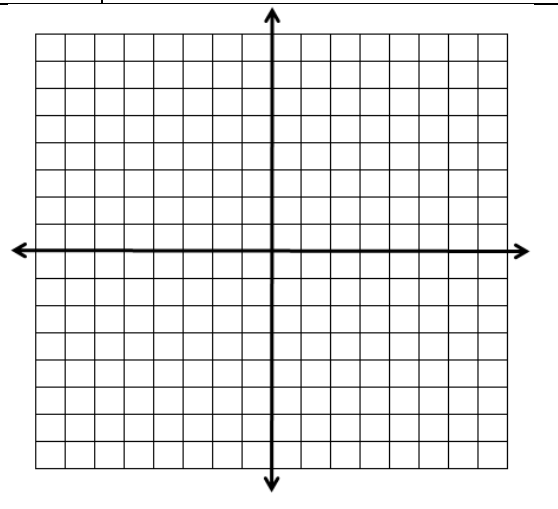
Coordinate of vertex:

Direction it opens:

Axis of symmetry:

Coordinate of focus:

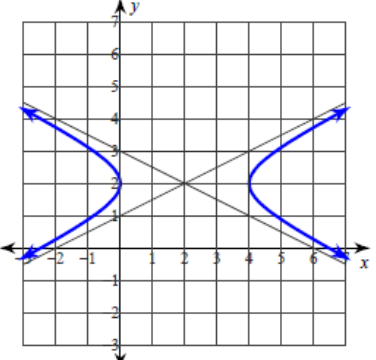
Equation of directrix:



5. Find an equation for the parabola that has a **focus** at  $(-2, 3)$  and a directrix at  $x = 2$ .

6. Write an equation for a circle whose center is at  $(-8, 2)$  and has a radius of 8.

7. Write an equation of the hyperbola.



8. Rewrite into conic section standard form and classify the conic.

$$9x^2 - 25y^2 - 50y - 250 = 0$$

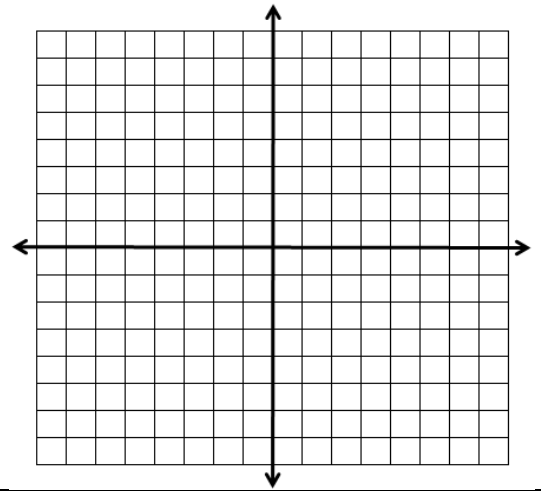
9. Sketch the graph of  $9(x + 3)^2 + 4(y - 2)^2 = 36$  and identify the coordinate points for each of the following.

Center:

Vertices:

Co-vertices:

Foci:



10. Write an equation for an ellipse whose vertices are at  $(1, -3)$  and  $(1, 5)$ . The co-vertices are at  $(-1, 1)$  and  $(3, 1)$ .

11. Write an equation for an ellipse given the following.  
Vertices:  $(9, 4), (-1, 4)$   
Foci:  $(7, 4), (1, 4)$

12. Write an equation for a hyperbola given the following.  
Vertices:  $(1, 5), (-19, 5)$   
Endpoints of Conjugate Axis:  $(-9, 11), (-9, -1)$

13. The cross section of a solar oven is a parabola. The heating point is located at the focus, 2.5 feet above the vertex and the oven is 4 feet across. Assume the vertex is at the origin. How deep is the oven? (*Hint: write an equation and solve for y.*)

14. The center cross section of a rope pulley forms a hyperbolic shape for the outline of the concaved groove. The horizontal transverse axis of the hyperbolic outline has a distance of 8 centimeters from vertex to vertex and the foci are  $2\sqrt{6}$  centimeters from the center. Write an equation that models the concaved groove.

