Name: ______________________________ Date:________________ Period: ________ **ID: 1**

Unit 11 Review – Conic Sections

1. Find the distance between $(-6, -3)$ and $(-3, 3)$. Round your answer to 3 decimals.

2. Find the midpoint between $(-5, 1)$ and $(3, -8)$.

3. Find the equation of the perpendicular bisector between $(1, 5)$ and $(-5, 3)$.

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

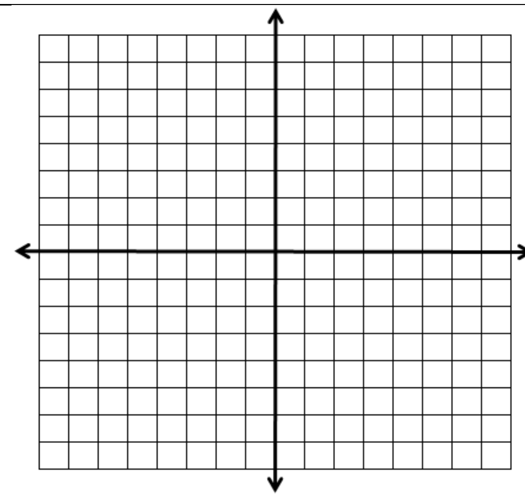
Coordinate of vertex:

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. $(2, -3)$ is a point on a circle whose center is at the origin. Write an equation of the line tangent to the circle at the given point.

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

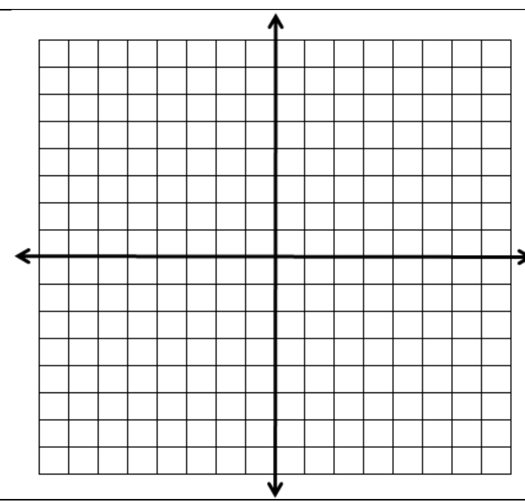
8. Sketch the graph of $9(x + 3)^2 + 4(y - 2)^2 = 36$ and identify the coordinate points for each of the following.

Center:

Vertices:

Co-vertices:

Foci:

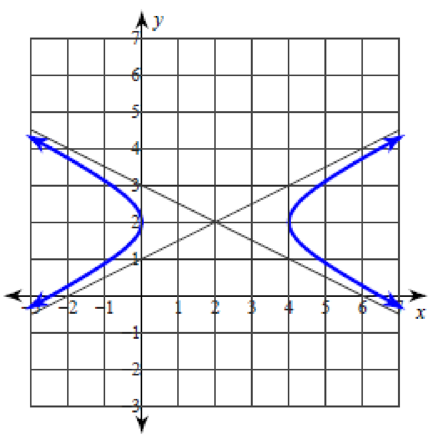


9. Write an equation for a circle whose center is at $(-3, -15)$ and one point on the circle is $(-6, -16)$.

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

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

12. Write an equation of the hyperbola.



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

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

14. 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.*)

15. 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.