Math 3 Unit 7 Review Worksheet 1 **Name:**_____
Parabolas & Circles **Date:**_____ **Per:**_____

1. Is the point $(3, 10)$ on the parabola, $y + 6 = (x + 1)^2$? Justify your response.

2. Is the point $(1, 4)$ inside, outside, or on the circle, $(x + 2)^2 + (y - 1)^2 = 16$? Justify your response.

3. Is the point $(-7, 5)$ inside, outside, or on the circle, $(x + 1)^2 + (y - 2)^2 = 49$? Justify your response.

4. What is the vertex and the length of the focal chord for the parabola, $x = \frac{1}{12}(y - 3)^2 - 1$?

   Vertex: _____

   Focal chord length: _____

5. What is the center and the length of the radius for the circle, $x^2 + y^2 + 8x - 6y - 3 = 0$?

   Center: _____

   Radius: _____

6. What is the vertex and the length of the focal chord for the parabola, $2x^2 - 12x - 5y - 12 = 0$?

   Vertex: _____

   Focal chord length: _____

7. Write the equation for the circle with center $(4, -1)$ and diameter $8\sqrt{2}$.

8. Using the distance formula and the definition of parabola, write the equation for the parabola in focal width form, $(y - k)^2 = 4c(x - h)$, that has a focus at the point $(-7, 2)$ and a directrix of $x = 1$.

9. Using the distance formula and the definition of parabola, write the equation for the parabola in vertex/descriptive form, $y = a(x-h)^2 + k$, that has a directrix of $y = 2$ and a focus at the point $(-1, 8)$.

10. Sketch the graph for the parabola, $x^2 = 2(y-1)$. Find, graph, and identify the focus, directrix, and focal chord endpoints.

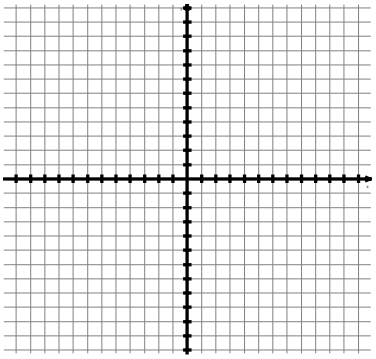
Vertex: _____

Focus: _____

Directrix: _____

Focal chord endpoints:

_____ and _____



11. Sketch the graph for the parabola, $x + 4 = \frac{1}{6}(y-1)^2$. Find, graph, and identify the focus, directrix, and focal chord endpoints.

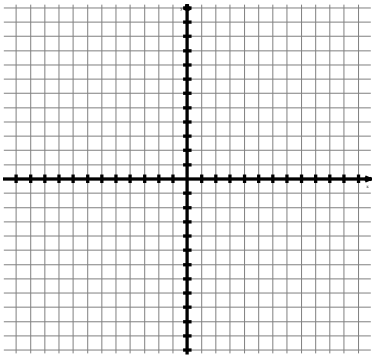
Vertex: _____

Focus: _____

Directrix: _____

Focal chord endpoints:

_____ and _____



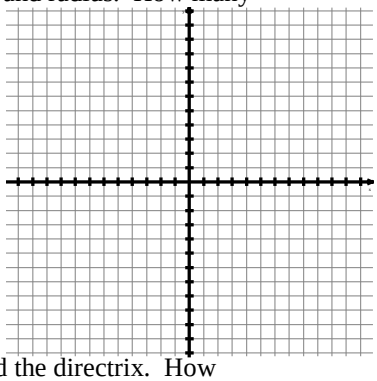
12. Sketch the graph for the circle, $x^2 + y^2 + 2y - 10x + 8 = 0$. Find, graph, and identify the center and radius. How many times does the circle intersect with the *x*-axis? the *y*-axis?

Center: _____

Radius: _____

Number of x-intercepts: _____

Number of y-intercepts: _____



13. Sketch the graph for the parabola, $\frac{1}{4}x^2 - 4x + y + 15 = 0$. Find, graph, and identify the focus and the directrix. How many times does the parabola intersect with the *x*-axis? the *y*-axis?

Focus: _____

Directrix: _____

Number of x-intercepts: _____

Number of y-intercepts: _____