

Math 3 Unit 7 Review Worksheet 2
Parabolas & Circles

Name: _____
Date: _____ **Per:** _____

Show all valid & appropriate work.

1. Find the center and the radius for the circle $x^2 + y^2 - 12x + 4y = 9$. Is the point $(6, 5)$ on the circle? Justify/explain.

Center: _____

Radius: _____

Is $(6, 5)$ on the circle? Y or N

2. Write the equation for the circle with center $(5, -2)$ and with diameter $10\sqrt{3}$. Which one of the three is the correct response: The point $(-3, 2)$ is inside / outside / on the circle with center $(5, -2)$ and diameter $10\sqrt{3}$. Justify/explain.

Equation: _____

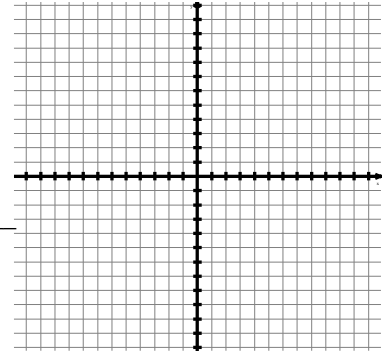
3. Write the equation for the circle with endpoints of a diameter $(3, 12)$ and $(-5, 2)$. Hint: Find the center first!
 How many times does this circle intersect with the x -axis? How many times does this circle intersect with the y -axis?

Center: _____

Number of x -intercepts: _____

Number of y -intercepts: _____

Equation: _____



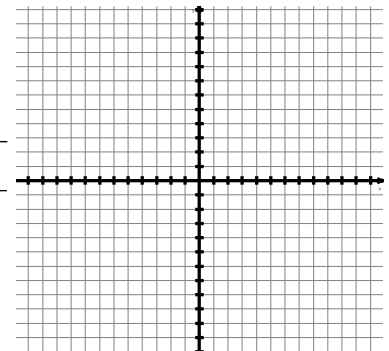
4. What is the focus and the equation of the directrix for $x - 4 = -\frac{1}{12}(y + 1)^2$? How many times does this parabola intersect with the x -axis? the y -axis?

Focus: _____

Directrix: _____

Number of x -intercepts: _____

Number of y -intercepts: _____



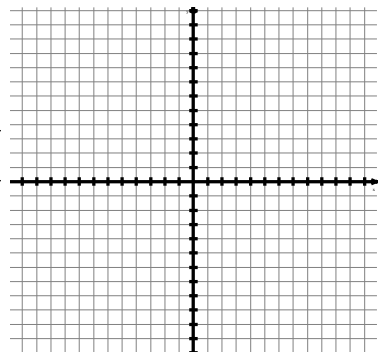
5. What is the focus and the equation of the directrix for $(x - 2)^2 = -2(y + 3)$? How many times does this parabola intersect with the x -axis? the y -axis?

Focus: _____

Directrix: _____

Number of x -intercepts: _____

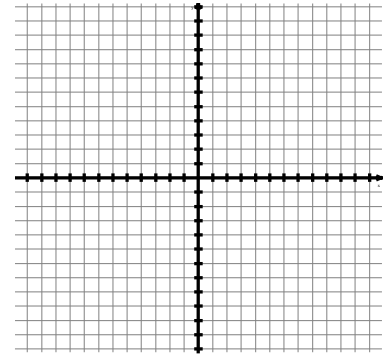
Number of y -intercepts: _____



6. What is the vertex and the equation for the line of symmetry for the parabola $2y^2 - 20y - x + 47 = 0$?

Vertex: _____

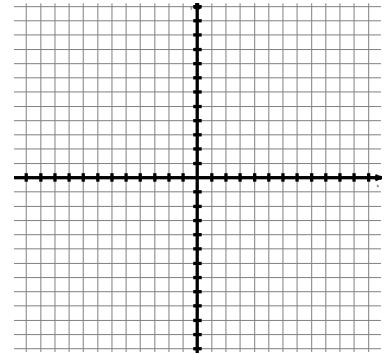
Line of Symmetry: _____



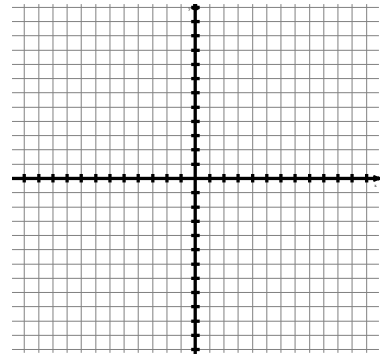
[7-8]: Using the distance formula and the definition for parabola, write the equation for each parabola in either Focal Width form or a variation of Vertex/Descriptive form.

Reminders – Focal Width form: $(x - h)^2 = 4c(y - k)$ or $(y - k)^2 = 4c(x - h)$
 Vertex/Descriptive form: $y = a(x - h)^2 + k$ or $x = a(y - k)^2 + h$

7. Focus is at $(-5, 0)$ and the equation for the directrix is $x = 5$. Sketch the parabola.

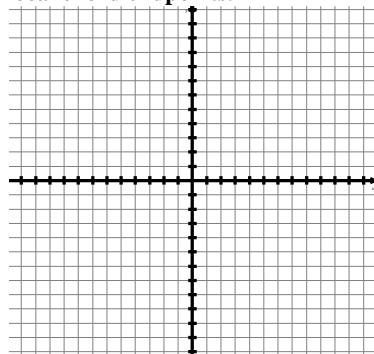


8. Focus is at $(-4, 5)$ and the equation for the directrix is $y = -3$. Sketch the parabola.



[9-10]: Convert to either Focal Width form or a variation of Vertex/Descriptive form. Once you have done this, sketch the parabola, find and graph the focus, directrix, and focal chord endpoints.

9. $4x + 11 = y^2 + 6y$



10. $2x^2 - 4x = 4y - 14$

