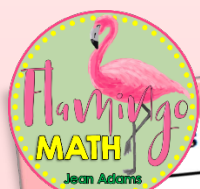


Algebra 2 Honors

Conic Sections

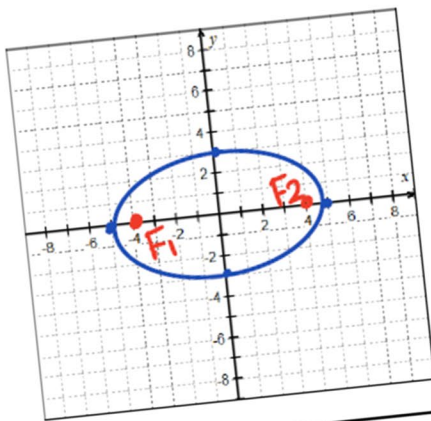


5 - 10, find the foci for each equation of an ellipse. Then graph the ellipse.

5. $\frac{x^2}{25} + \frac{y^2}{9} = 1$

$F_1: (-4, 0)$

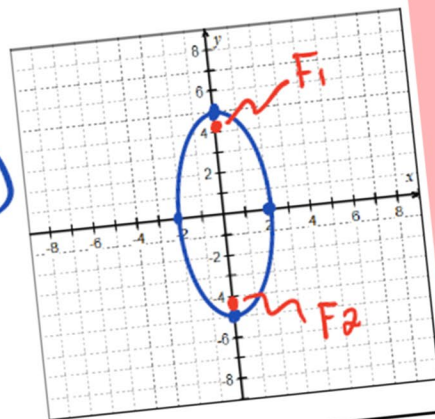
$F_2: (4, 0)$



6. $\frac{x^2}{4} + \frac{y^2}{25} = 1$

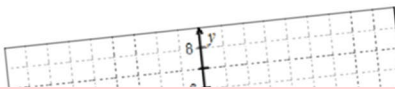
$F_1: (0, \sqrt{21})$

$F_2: (0, -\sqrt{21})$



7. $\frac{x^2}{9} + \frac{y^2}{16} = 1$

$F_1: (0, \sqrt{7})$



8. $\frac{x^2}{36} + \frac{y^2}{9} = 1$

$F_1: (-3\sqrt{3}, 0)$

$F_2: (3\sqrt{3}, 0)$



Homework

10

Completely Editable

ALGEBRA 2 CURRICULUM

Scope and Sequence

Unit 10: Conic Sections

Lesson	Skills & Learning Objectives
[10.1] Parabolas	☐ Find the equation, focus, and directrix of a parabola ☐ Write, analyze and graph the equation of a parabola, including completing the square ☐ Understand the impact of parameters on graphs of parabolas
[10.2] Circles	☐ Write, analyze and graph the equation of a circle ☐ Find the center and radius of a circle on a coordinate plane and use them to graph the circle ☐ Write standard form equations for a circle by completing the square ☐ Solve real-world problems involving circles
[10.3] Ellipses	☐ Write, analyze and graph the equation of an ellipse ☐ Find the equation, foci, major and minor vertices of an ellipse, as well as completing the square ☐ Solve real-world problems involving ellipses
[10.4] Hyperbola	☐ Write, analyze and graph the equation of a hyperbola ☐ Find the equation, foci, major and minor vertices and asymptotes for hyperbolas ☐ Complete the square to write standard form of a hyperbola ☐ Solve real-world problems involving hyperbolas

Parabolas Practice

Problems 1 – 6, determine whether each parabola opens upward, downward, to the left, or to the right.

1. $x = -4y^2$

2. $y = 8x^2$

3. $-16x = y^2$

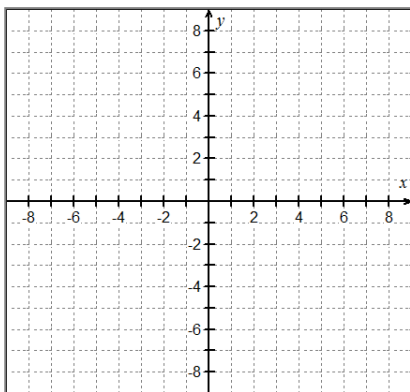
4. $x^2 - 4y = 0$

5. $-4x + 8y^2 = 0$

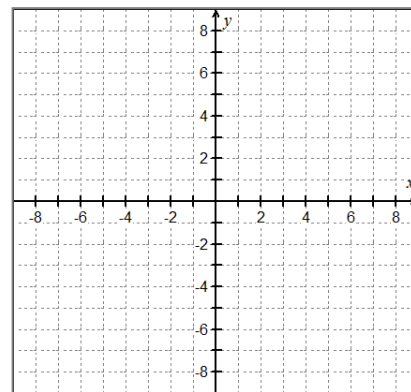
6. $y + 12x^2 = 0$

Problems 7 – 12, identify the vertex, the focus, and the directrix of the parabola with the given equation. Then sketch the graph of the parabola.

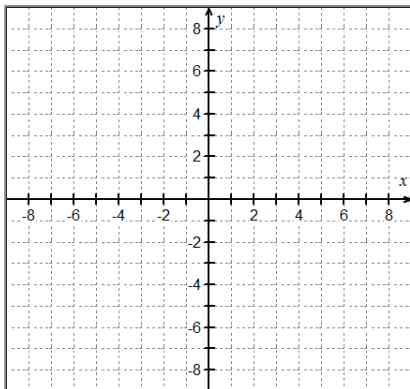
7. $y = \frac{1}{16}x^2$



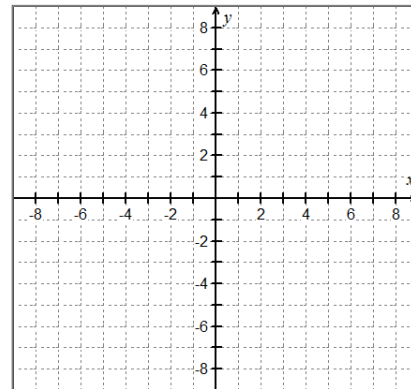
8. $x = -\frac{1}{4}y^2$



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



10. $-\frac{1}{8}(x + 3)^2 = y - 2$



Circles Practice

Problems 1 – 4, write an equation of a circle with the given center and radius.

1. $(0,0); r = 6$

2. $(-4,5); r = 9$

3. $(-1,-5); r = 3.5$

4. $(-6,0); r = 4.75$

Problems 5 – 8, write an equation for each translation.

5. $x^2 + y^2 = 9$; down 2

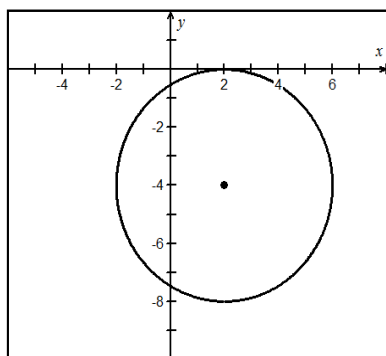
6. $x^2 + y^2 = 4$; left 3

7. $x^2 + y^2 = 12$; left 5 and up 3

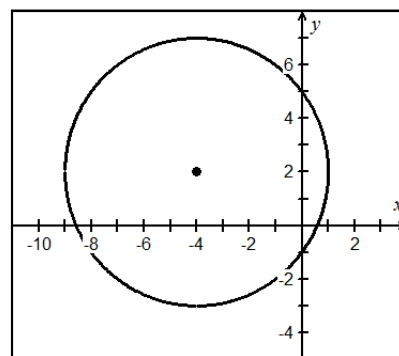
8. $x^2 + y^2 = 32$; right 3 and down 2

Problems 9 – 10, write an equation for each circle.

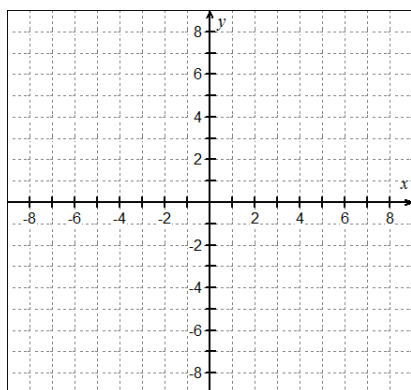
9.



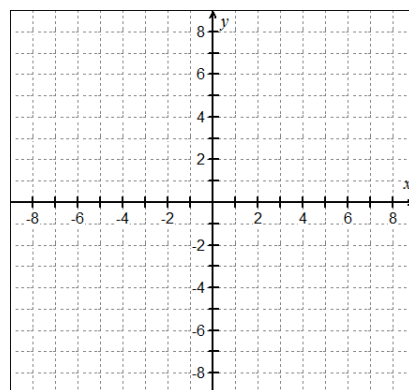
10.



9. $4x^2 + 16y^2 = 64$



10. $25x^2 + 16y^2 = 400$



Problems 11 – 13, find the distance between the foci of an ellipse. The lengths of the major and minor axes are listed.

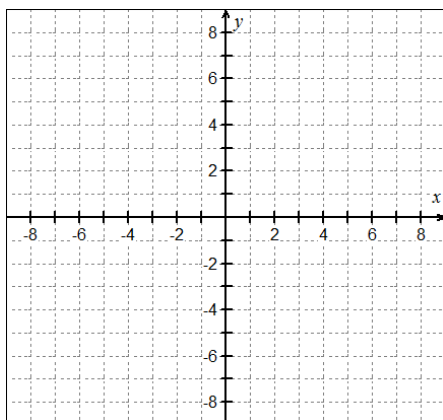
11. 20 and 16

12. 30 and 16

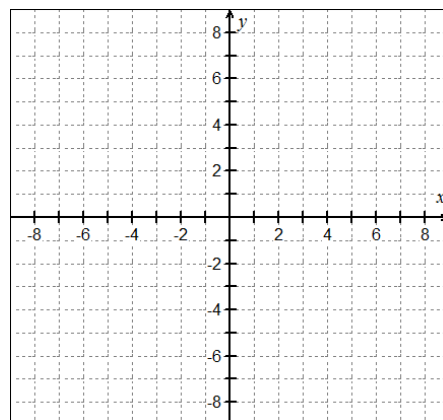
13. 28 and 7

Problems 14 -17, find the center, vertices, and foci, and draw each graph.

14. $\frac{(x-2)^2}{4} + \frac{(y-3)^2}{9} = 1$



15. $\frac{(x+4)^2}{25} + \frac{y^2}{16} = 1$



Hyperbolas Practice

Problems 1 – 4, write an equation of a hyperbola with the given values, foci, or vertices.
Assume that the transverse axis is horizontal.

1. $a = 12, b = 7$

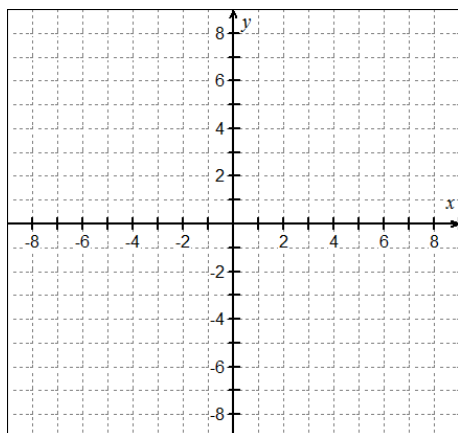
2. $b = 9, c = 12$

3. $a = 7, c = 9$

4. foci $(\pm 8, 0)$ vertices $(\pm 2, 0)$

Problems 5 – 10, find the center, transverse axis, vertices, foci, and asymptotes. Graph each equation.

5. $\frac{x^2}{25} - \frac{y^2}{25} = 1$



6. $\frac{y^2}{9} - \frac{x^2}{16} = 1$

