SM2H

Name:_____ Period:_____

Unit 5 – Conic Sections Test Review

Identify each equation as a parabola (p), hyperbola (h), ellipse (e), or circle (c).

_____1. $\frac{y^2}{16}-\frac{x^2}{49}=1$

_____2. $(x-4)^2+(y+1)^2=4$

_____3. $\frac{x^2}{4}+\frac{y^2}{36}=1$

_____4. $y^2-x^2=4$

_____5. $(x-6)^2+(y-6)^2=144$

_____6. $\frac{x^2}{121}-\frac{y^2}{9}=1$

_____7. $\frac{x^2}{169}+\frac{y^2}{144}=1$

_____8. $(y-1)^2=4(x+2)$

_____9. $\frac{y^2}{9}-\frac{x^2}{16}=1$

_____10. $(x-1)^2=12(y+3)$

_____11. vertex (2, 6); opens up; focus (2,7) directrix is y = 5

_____12. center is (0, 0); asymptotes $y=\pm\frac{2}{3}x$. Vertices (5, 0) & (-5, 0).

_____13. center is (3, 4);foci at (5, 4)&(1,4); vertices at (8, 4) and (-2, 4)

_____14. center is (-2, -6); r = 4

Determine the direction of opening, vertex, focus, focal width, the value of a, and directrix, then graph the parabola.

15. $(x-3)^2=8y$

Direction of opening_____

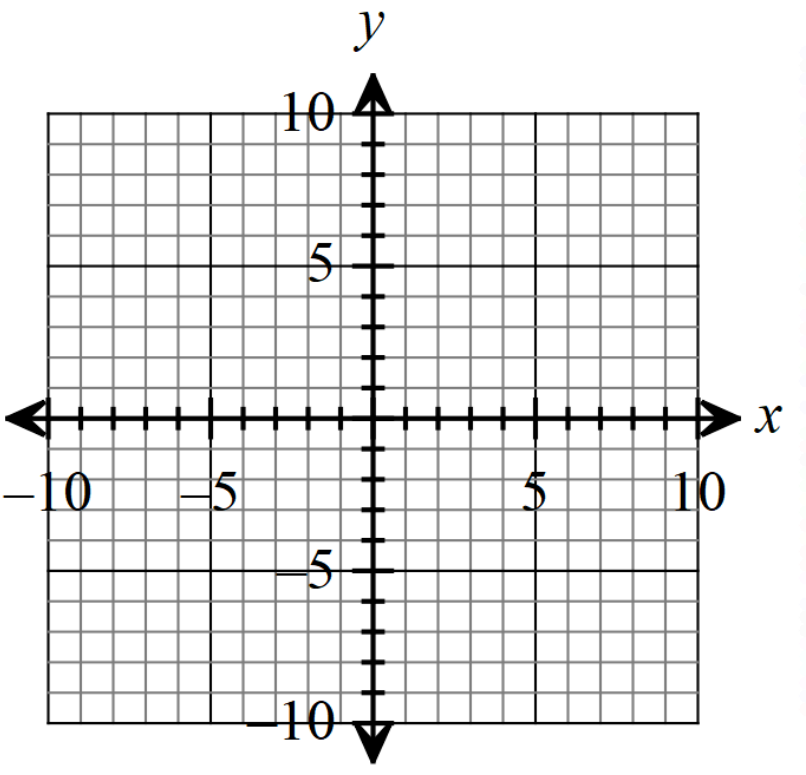
Vertex_____

Focal Width_____

a=_____

Focus_____

Directrix_____



16. $(y-5)^2 = 12(x-4)$

Direction of opening_____

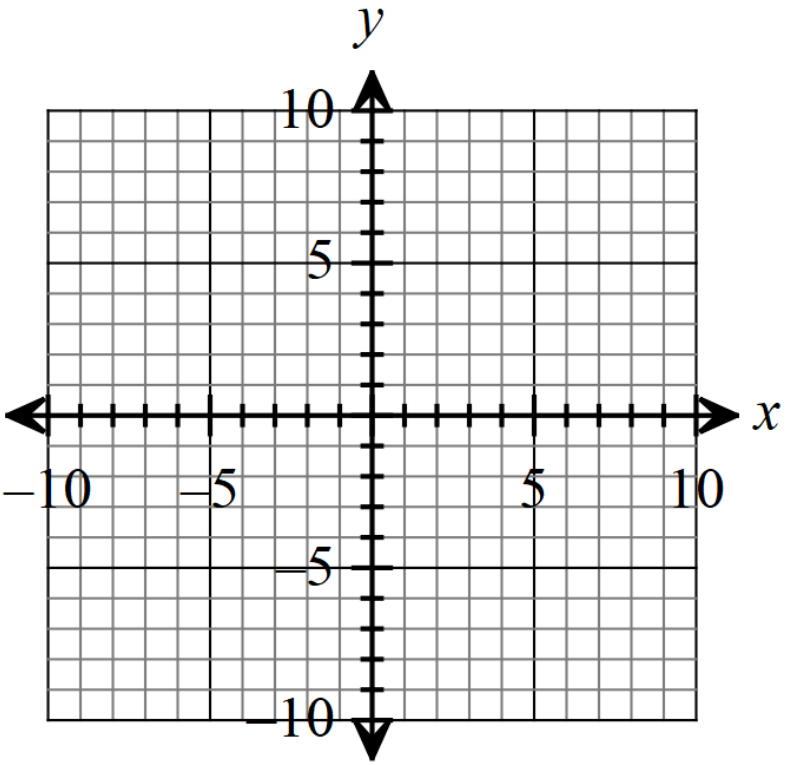
Vertex_____

Focal Width_____

a=_____

Focus_____

Directrix_____



Write an equation in standard form for each of the following parabolas (DRAW A GRAPH FOR HELP).

17. vertex at (3, -1), focus at (3, 2)

Direction of opening_____

Which equation should you use?

_____

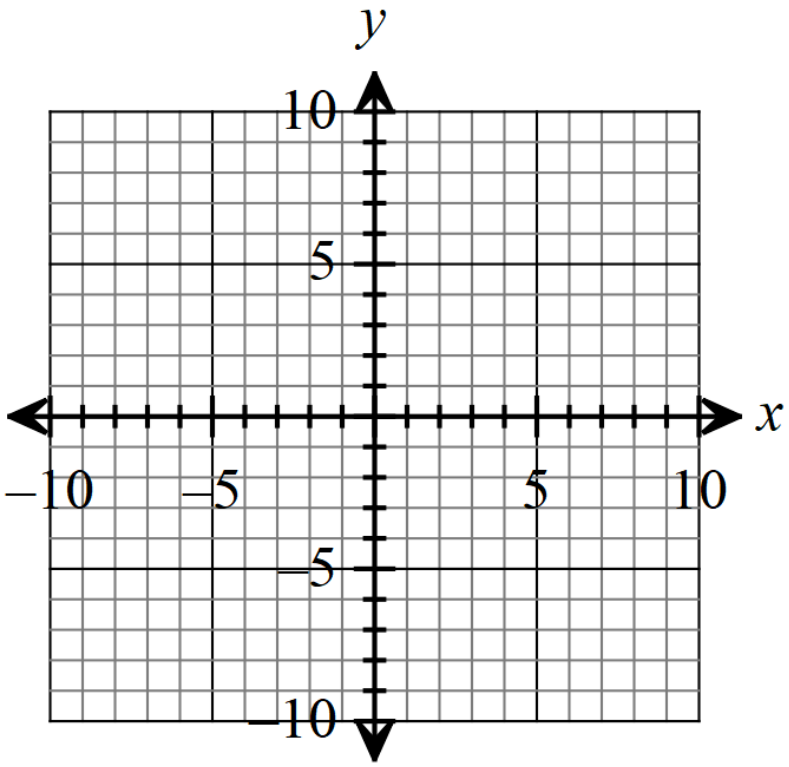
Vertex (h,k) _____

Focus_____

a=_____

Focal Width_____

Equation_____



18. focus at (-3, -1), directrix x=5

Direction of opening_____

Which equation should you use?

_____

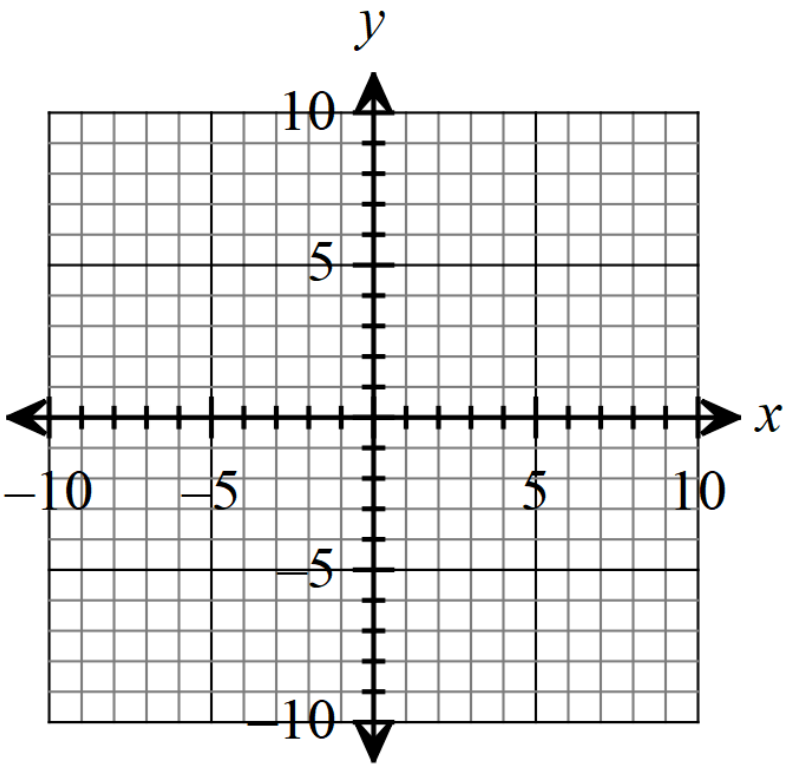
Vertex (h,k) _____

Focus_____

a=_____

Focal Width_____

Equation_____



Find the center, vertices, foci and the slope of the asymptotes of each hyperbola, then graph.

19. $\frac{x^2}{49} - \frac{y^2}{4} = 1$

Center: _____

a=_____

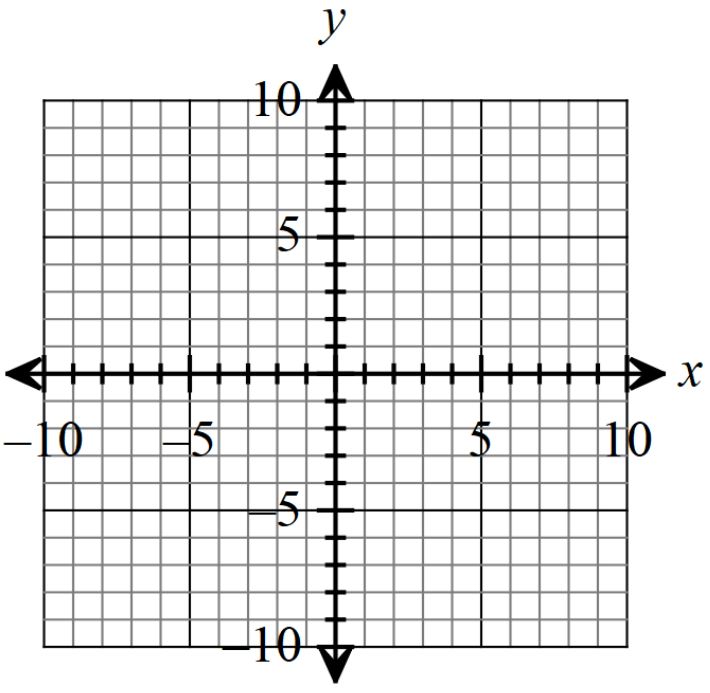
b=_____

c=_____

Vertices: _____

Foci: _____

Slope of the Asymptotes: _____



20. $25(y+2)^2-(x-4)^2=25$

Center: _____

a=_____

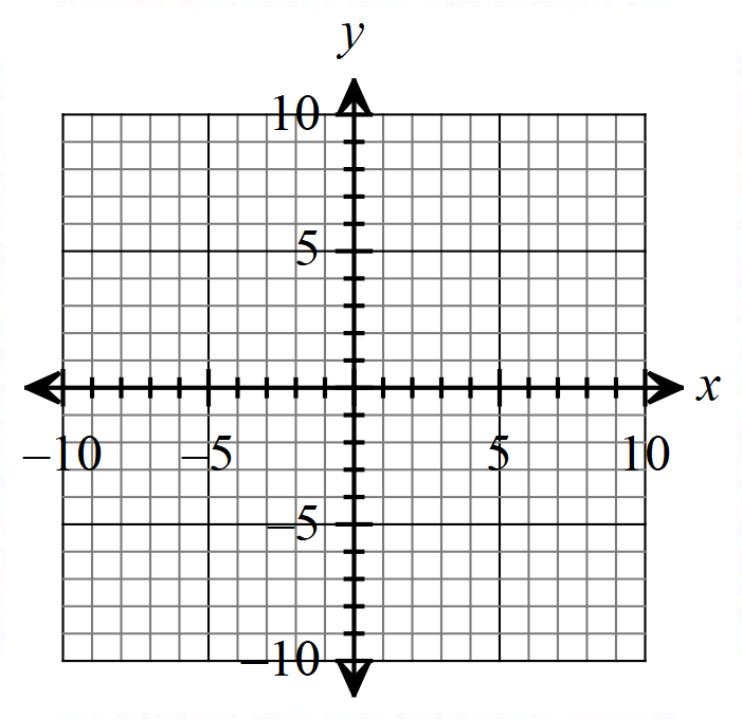
b=_____

c=_____

Vertices: _____

Foci: _____

Slope of the Asymptotes: _____



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

Center: _____

a=_____

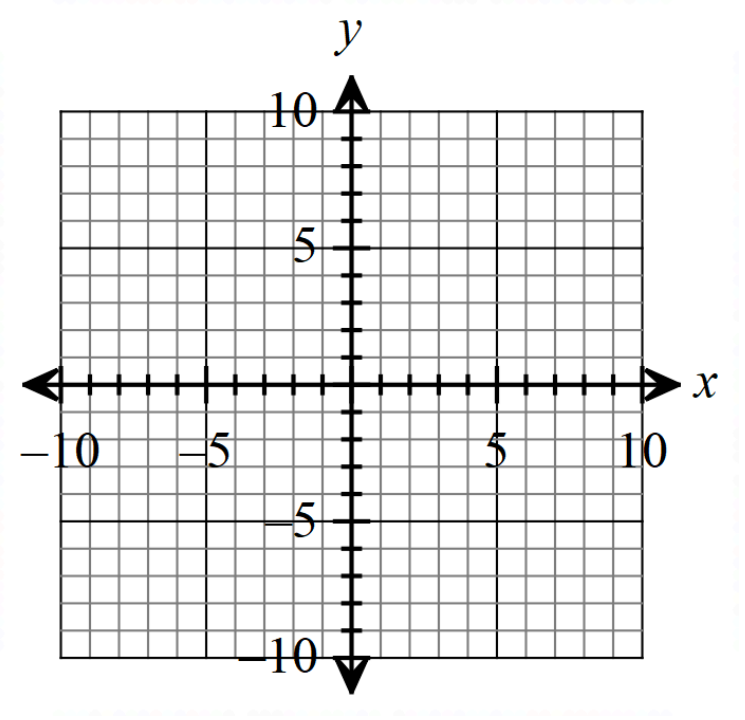
b=_____

c=_____

Vertices: _____

Foci: _____

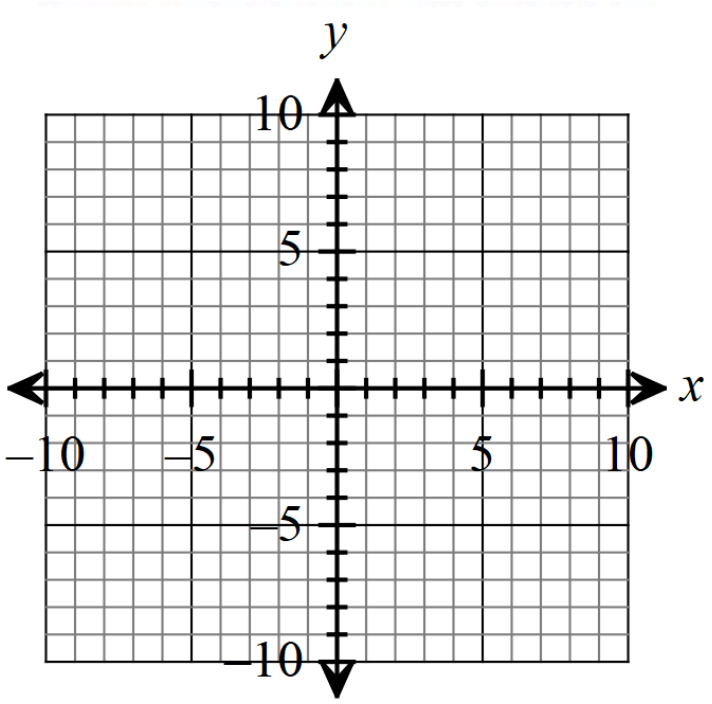
Slope of the Asymptotes: _____



Write an equation in standard form for the hyperbola that satisfies the given conditions.

22. Center at (0,0); Focus at (3, 0); Vertex at (2,0)

Which equations should you use?



_____

Center: _____

a=_____

b=_____

c=_____

Vertices: _____

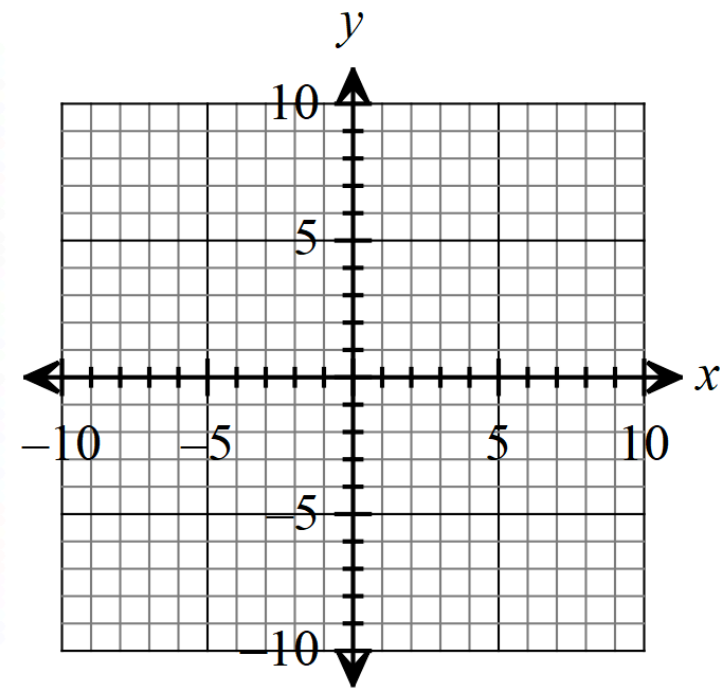
Foci: _____

Slope of the Asymptotes: _____

Equation_____

23. Foci at (-1, 3) and (-1,7); Vertex at (-1, 6)

Which equations should you use?



_____

Center: _____

a=_____

b=_____

c=_____

Vertices: _____

Foci: _____

Slope of the Asymptotes: _____

Equation: _____

Locate the vertices and foci of the ellipse, then graph.

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

Center: _____

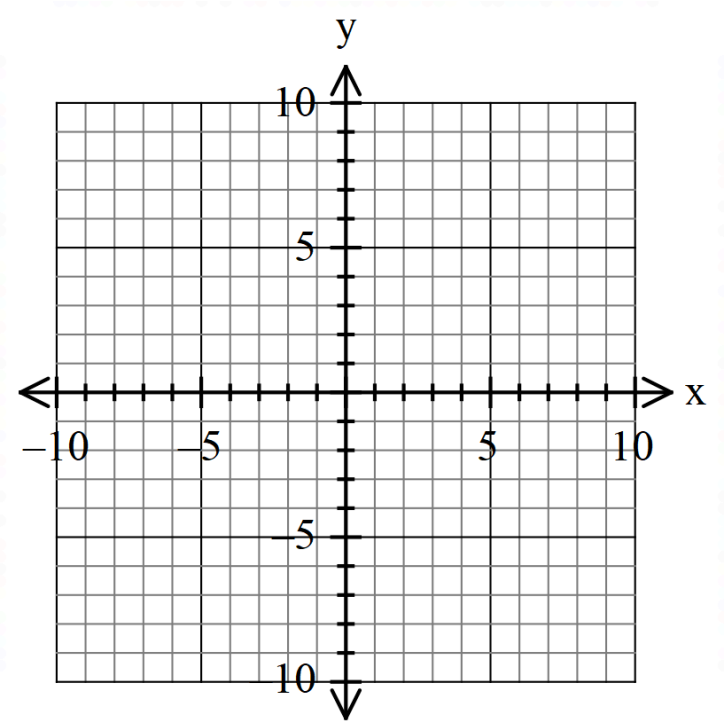
a=_____

b=_____

c=_____

vertices: _____

foci: _____



25. $9x^2+4y^2=36$

Center: _____

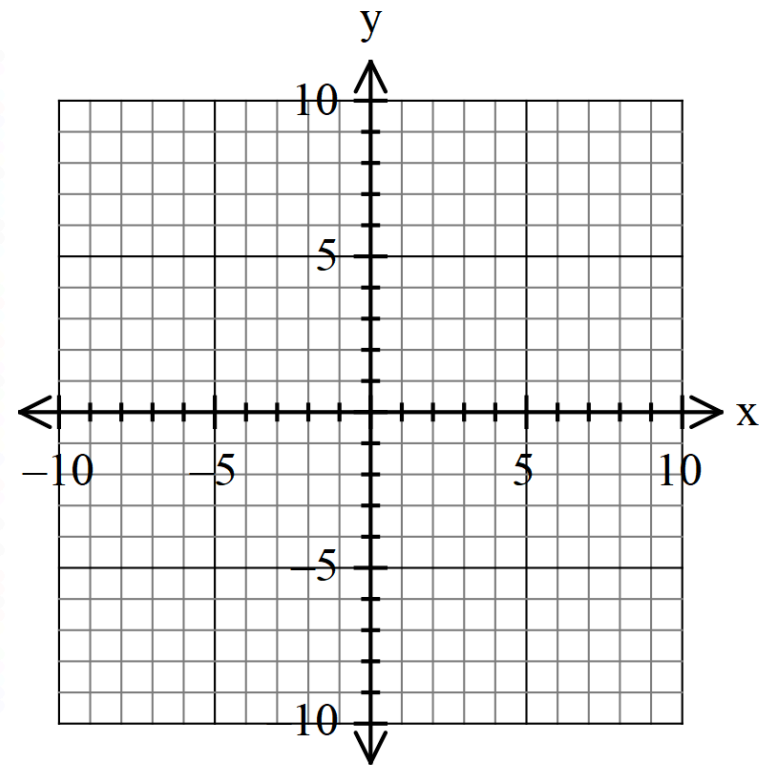
a=_____

b=_____

c=_____

vertices: _____

foci: _____



26. $\frac{(x-2)^2}{16}+\frac{(y+3)^2}{9}=1$

Center: _____

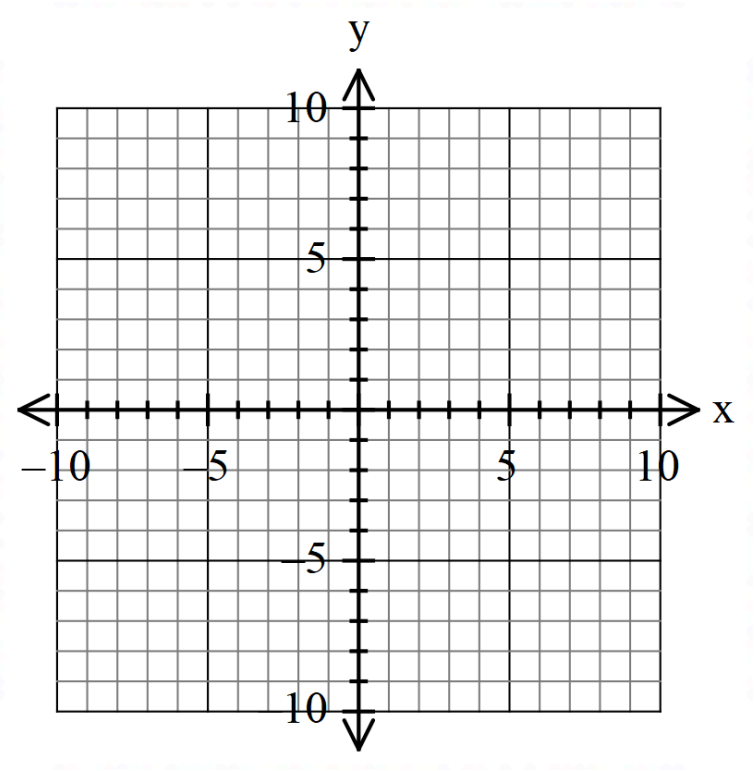
a=_____

b=_____

c=_____

vertices: _____

foci: _____



Write an equation in standard form for the ellipse that satisfies the given conditions.

27. Foci: (-5,0) and (5, 0); Vertices: (-8,0) and (8,0)

Which equation should you use?

_____

Center: _____

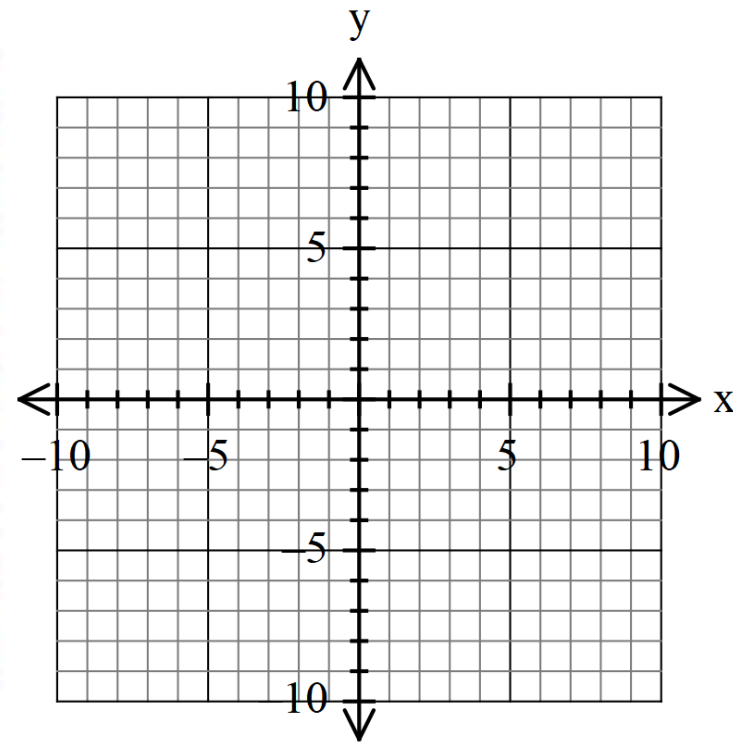
a=_____

b=_____

c=_____

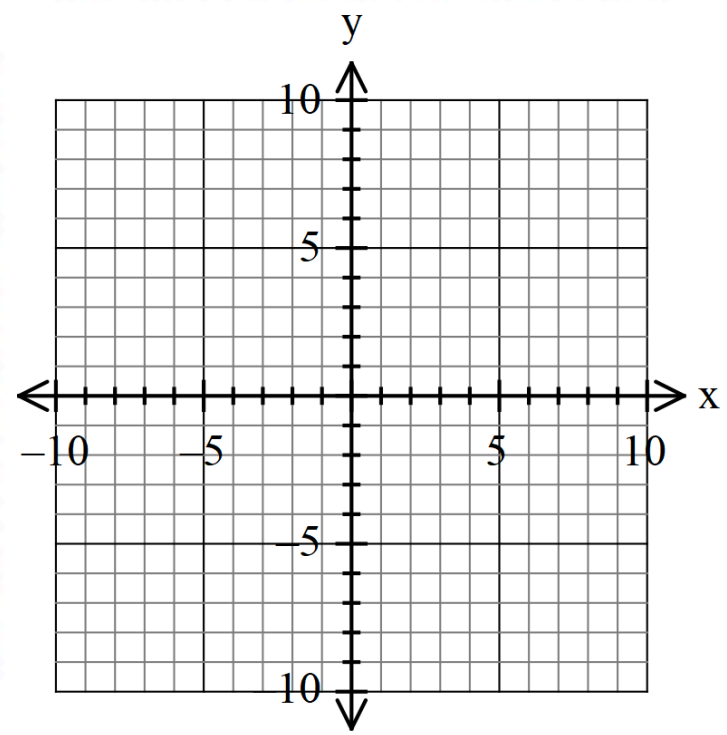
vertices: _____

foci: _____



Equation:_____

28. Foci: (-4,3) and (6,3); Minor axis length is 6.



Which equation should you use?

_____

Center: _____

a=_____

b=_____

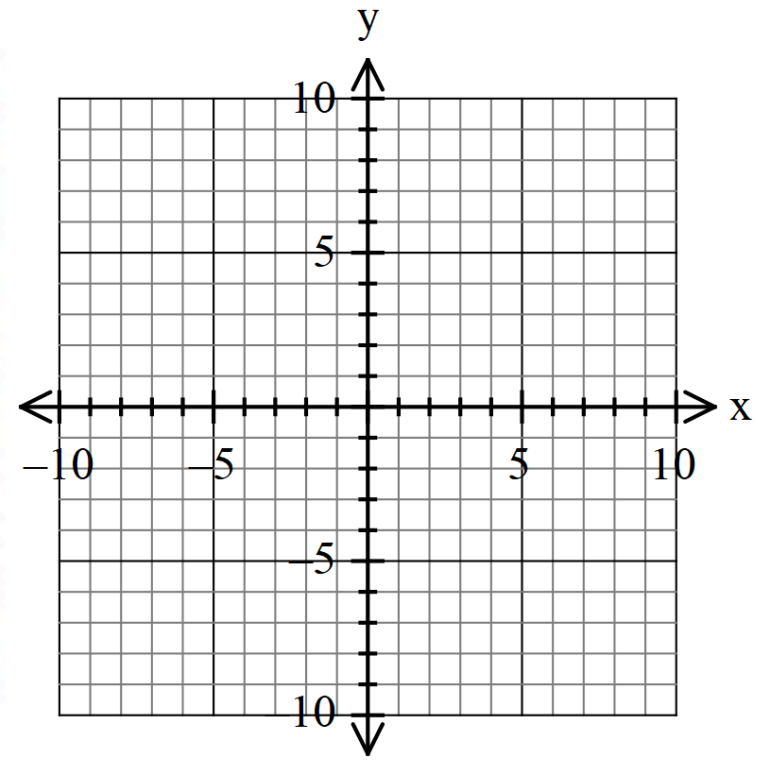
c=_____

vertices: _____

foci: _____

Equation:_____

29. Foci: (4,-2) and (4,6); Vertices: (4,-4) and (4,8)



Which equation should you use?

_____

Center: _____

a=_____

b=_____

c=_____

vertices: _____

foci: _____

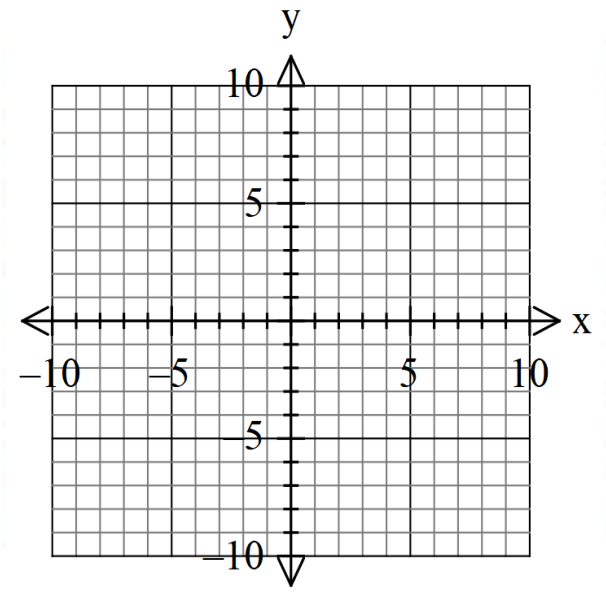
Equation:_____

Given the standard form of a circle, identify the center and the radius of each circle. Then graph the circle.

30. $x^2 + (y-1)^2 = 64$

center:_____

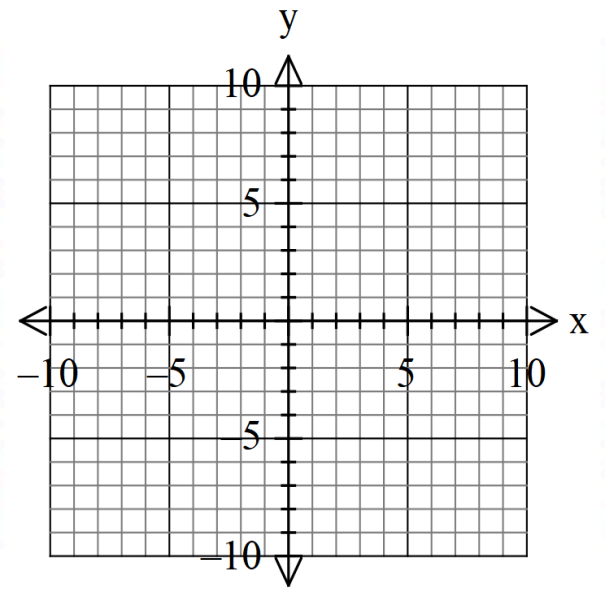
radius:_____



31. $(x+6)^2 + (y-1)^2 = 20$

center:_____

radius:_____

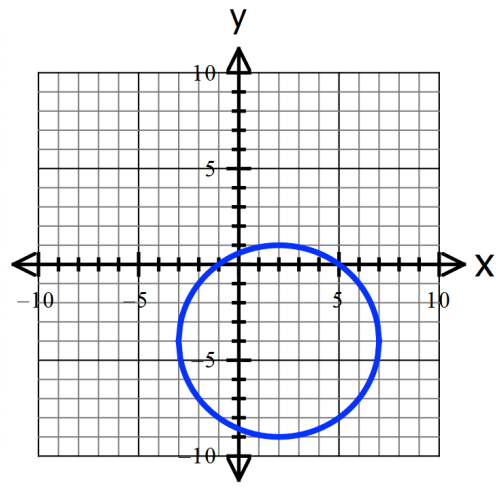


32. Write the standard form of the equation for the circle.

Center: _____

Radius: _____

Equation: _____



Write the standard form of a circle with the given characteristics.

33. A circle centered at the origin with a radius of 7.

Center: _____

Radius: _____

Equation: _____

34. A circle with diameter of 12 centered at $(2,-4)$

Center: _____

Radius: _____

Equation: _____

Find the midpoint.
35. $P_1 = (2, -4)\ and\ P_2 = (-5, 8)$

Find the distance between the two points.
36. $P_1 = (1, -6)\ and\ P_2 = (-7, 4)$

Write the standard form of a circle with the given characteristics. (hint: draw a picture of the circle)
37. A circle with center at (0, -2) and a point on the circle at (3, 0)

Center: _____

Radius: _____

Equation: _____

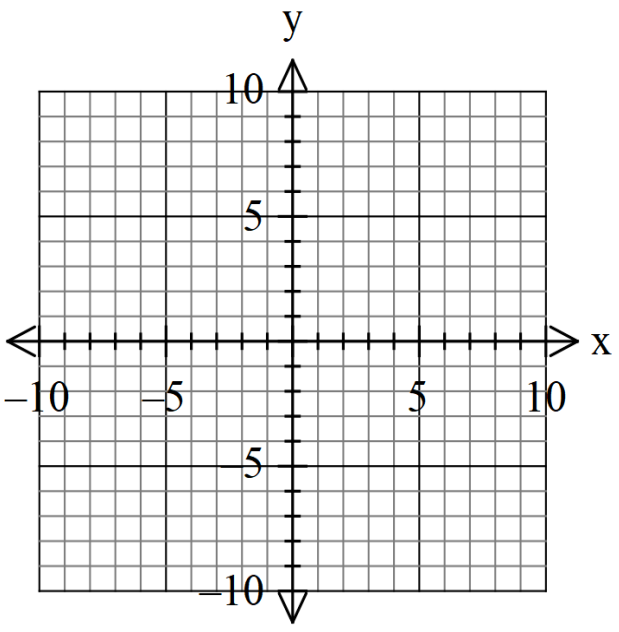
38. A circle with diameter endpoints at $(2, -12)$ and (-4, -12)

Center: _____

Radius: _____

Equation: _____

Complete the square to rewrite the equation in standard form. Find the center and the radius of a circle given by each equation and then draw the graph.
39. $x^2 + y^2 - 6x - 4y + 9 = 0$



Equation:_____

Center:_____

Radius: _____