SM2H Name:_____ Period:_____

5.4 Ellipses

Locate the vertices and foci of the ellipse (centered at the origin), then graph.

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

Center: _____

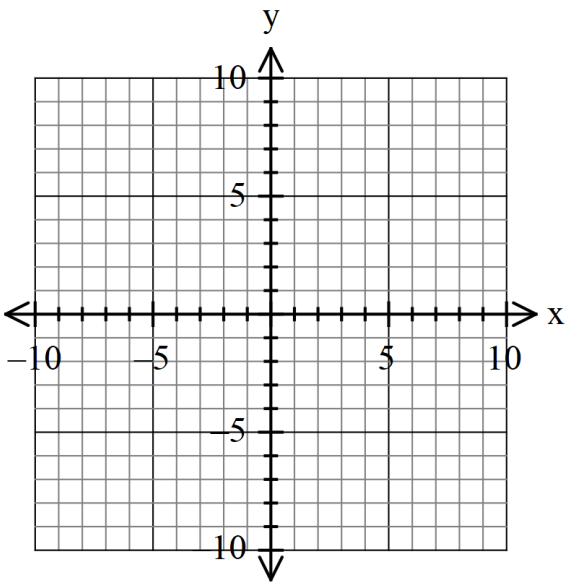
a=_____

b=_____

c=_____

vertices: _____

foci: _____



2. $\frac{x^2}{64}+\frac{y^2}{25}=1$

Center: _____

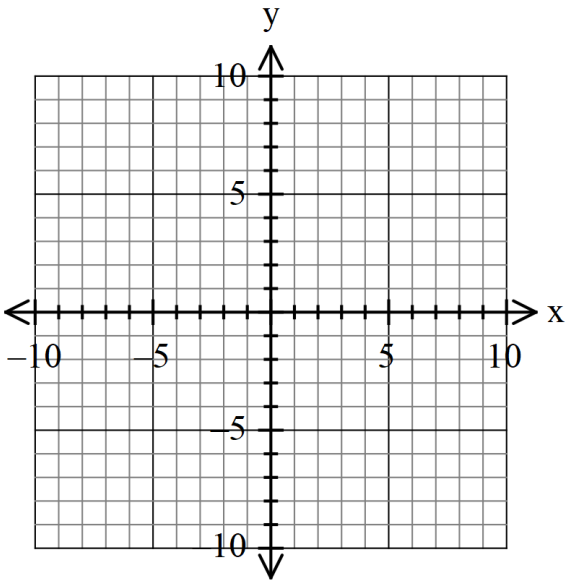
a=_____

b=_____

c=_____

vertices: _____

foci: _____



3. $4x^2 + 9y^2 = 36$

Center: _____

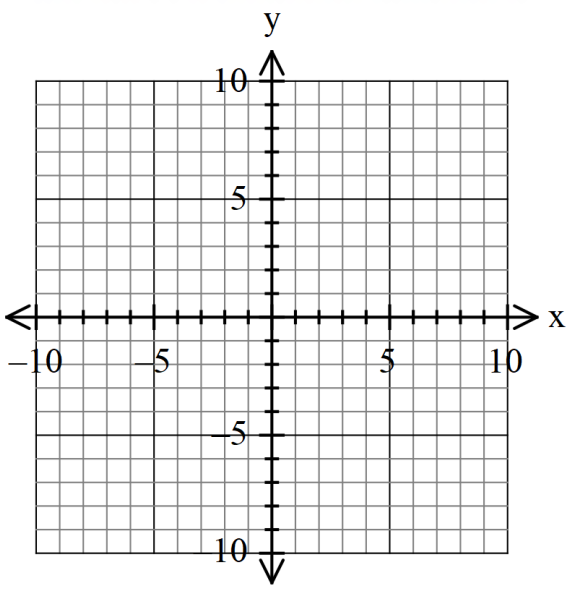
a=_____

b=_____

c=_____

vertices: _____

foci: _____



4. $\frac{x^2}{49} + \frac{y^2}{81} = 1$

Center: _____

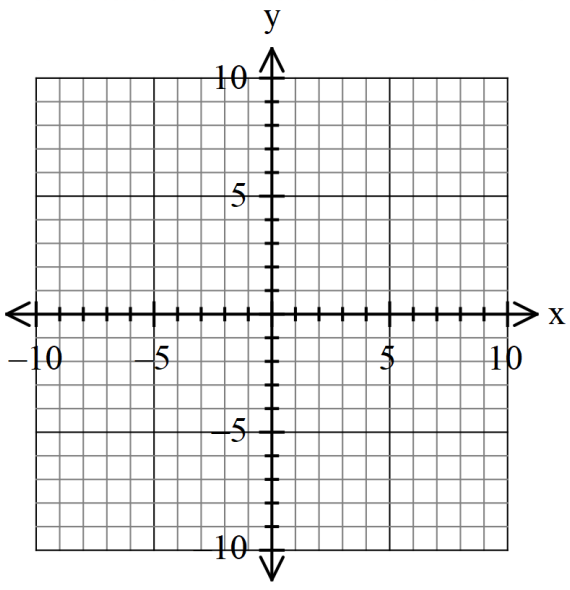
a=_____

b=_____

c=_____

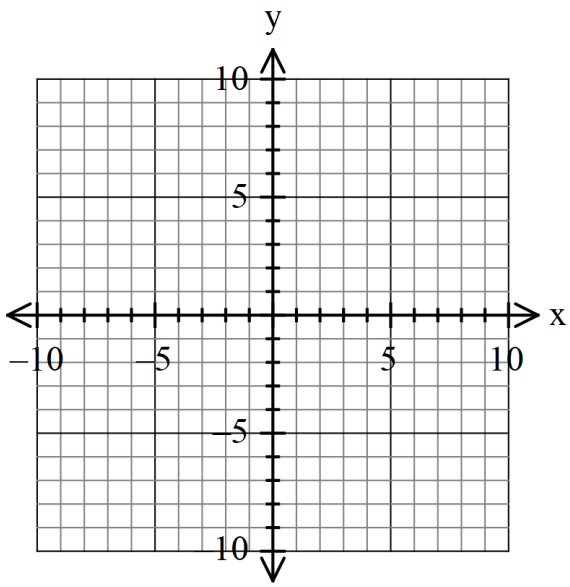
vertices: _____

foci: _____



Write an equation in standard form for the ellipse (centered at the origin) that satisfies the given conditions.

5. Foci: (-6,0) and (6, 0); Vertices: (-10,0) and (10,0)



Which equation should you use?

_____

Center: _____

a=_____

b=_____

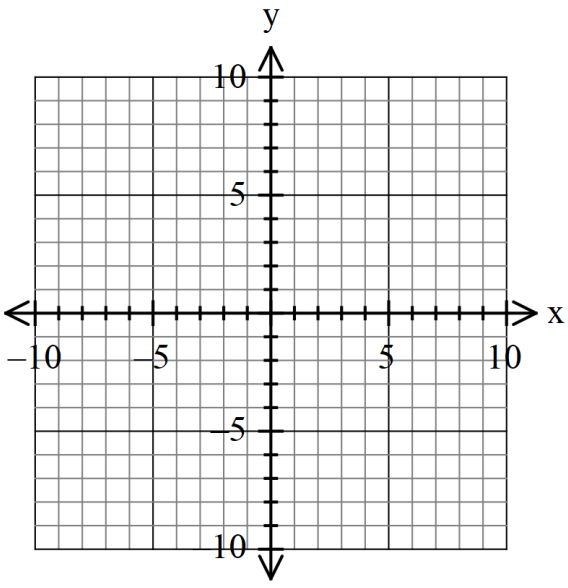
c=_____

vertices: _____

foci: _____

Equation:_____

6. Foci: (0,-3) and (0,3); Vertices: (0,-4) and (0,4)



Which equation should you use?

_____

Center: _____

a=_____

b=_____

c=_____

vertices: _____

foci: _____

Equation:_____

7. Major axis endpoints: (0,6) and (0,-6); Minor axis length: 8 units

Which equation should you use?

_____

Center: _____

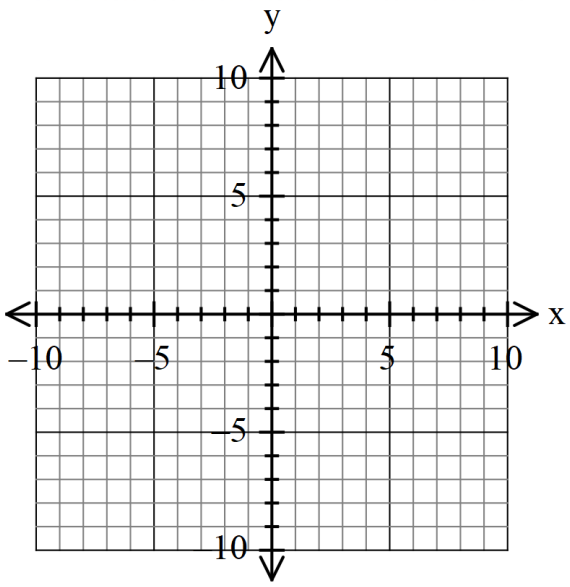
a=_____

b=_____

c=_____

vertices: _____

foci: _____



Equation:_____

8. Endpoints of axes are: (3,0) & (-3,0) and (0,-2) & (0,2)

Which equation should you use?

_____

Center: _____

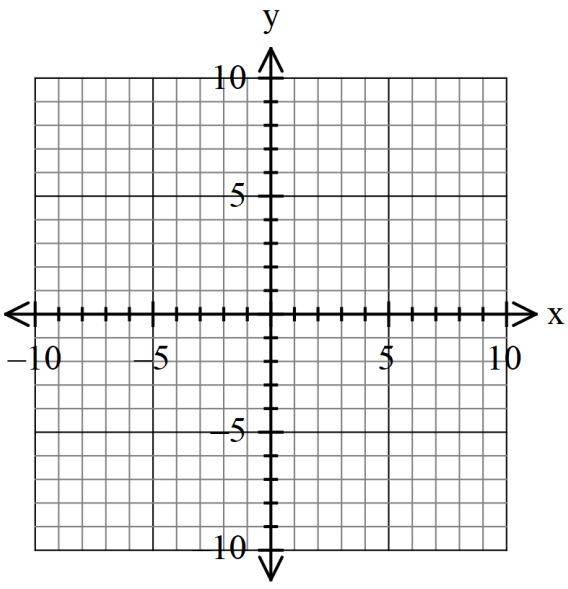
a=_____

b=_____

c=_____

vertices: _____

foci: _____



Equation:_____

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

9. $\frac{(x-3)^2}{4}+\frac{(y+2)^2}{16}=1$

Center: _____

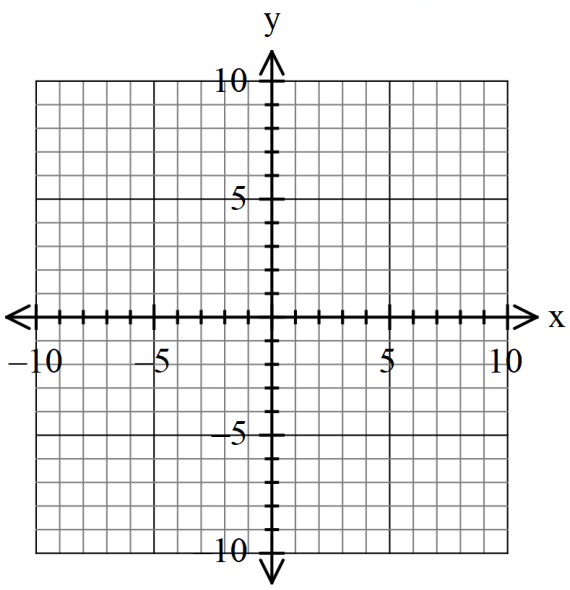
a=_____

b=_____

c=_____

vertices: _____

foci: _____



10. $\frac{(x+3)^2}{25}+\frac{(y+1)^2}{9}=1$

Center: _____

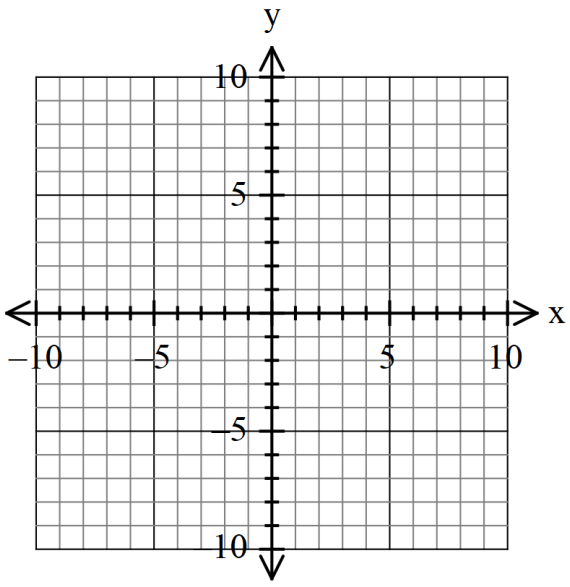
a=_____

b=_____

c=_____

vertices: _____

foci: _____



11. $(x-3)^2+4(y+2)^2=36$

Center: _____

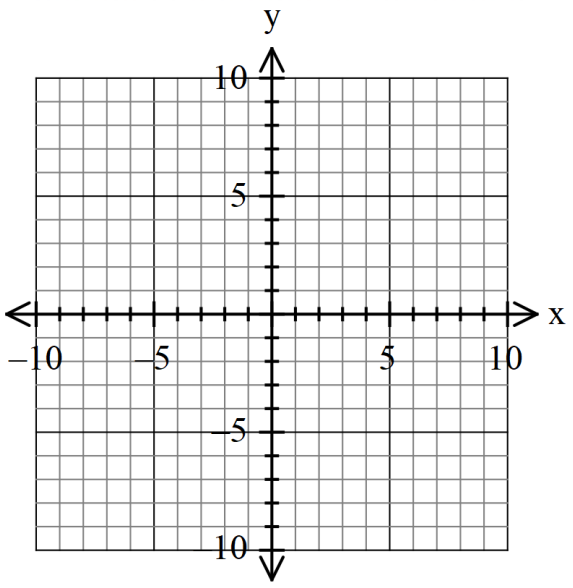
a=_____

b=_____

c=_____

vertices: _____

foci: _____



12. $4(x+1)^2+(y+2)^2=16$

Center: _____

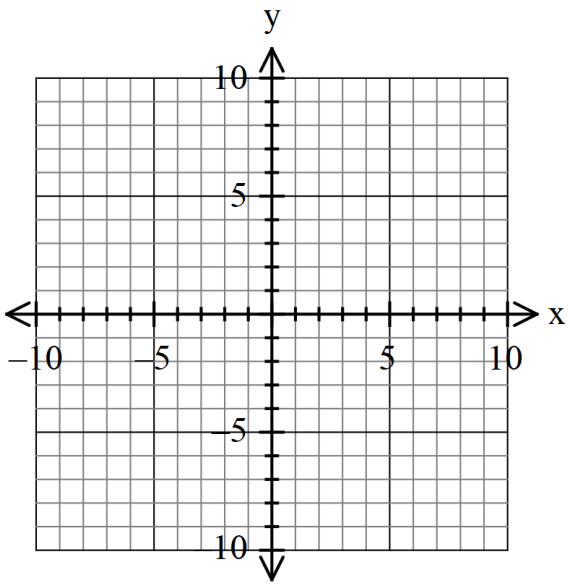
a=_____

b=_____

c=_____

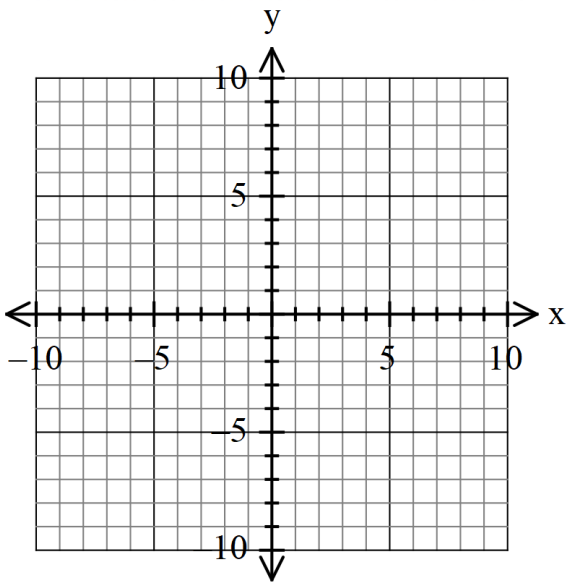
vertices: _____

foci: _____



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

13. Foci: (3,-6) and (3,2)
Vertices: (3,-7) and (3,3)



Which equation should you use?

_____

Center: _____

a=_____

b=_____

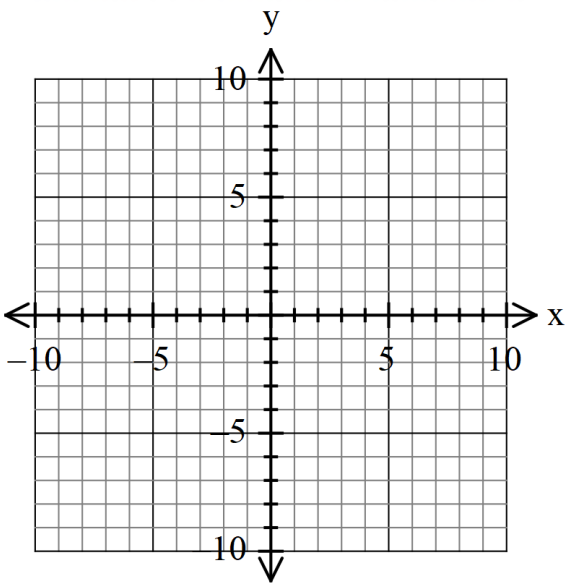
c=_____

vertices: _____

foci: _____

Equation:_____

14. Foci: (-5,2) and (3,2)
Minor axis length is 6.



Which equation should you use?

_____

Center: _____

a=_____

b=_____

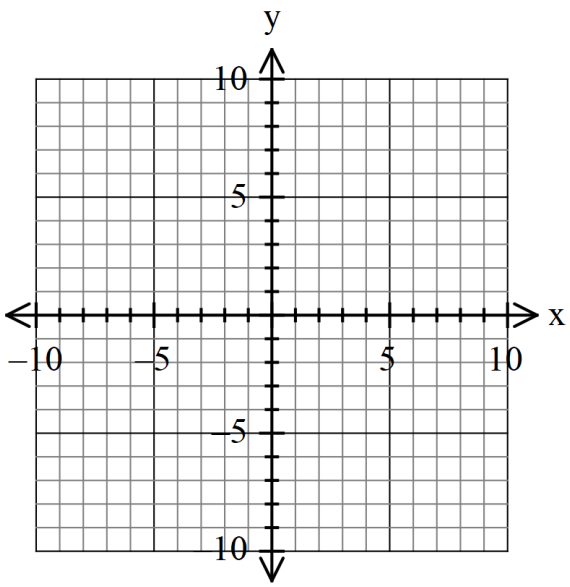
c=_____

vertices: _____

foci: _____

Equation:_____

15. Foci: (4,2) and (6,2)
Vertices: (2,2) and (8,2)



Which equation should you use?

_____

Center: _____

a=_____

b=_____

c=_____

vertices: _____

foci: _____

Equation:_____

REVIEW

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

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

17. $\frac{x^2}{100}+\frac{y^2}{36}=1$ _____

18. $y=8(x-7)^2+10$ _____

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

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

21. $y^2-x^2=4$ _____

22. $\frac{x^2}{256}+\frac{y^2}{1}=1$ _____

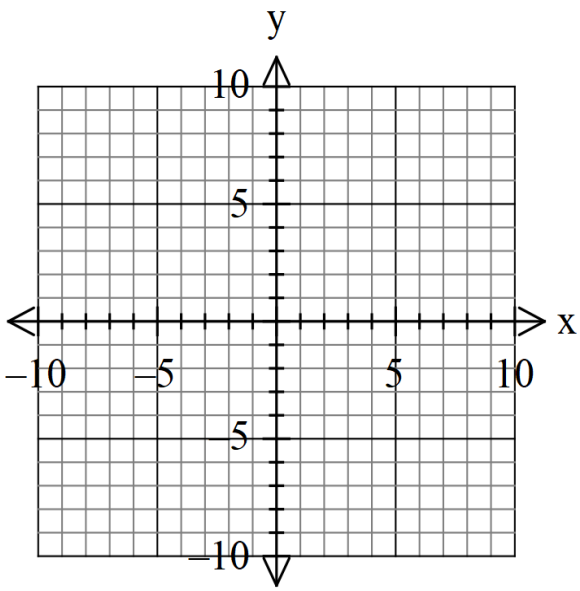
23. $y=-3x^2-4$ _____

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

24. $x^2 + y^2 = 16$

center:_____

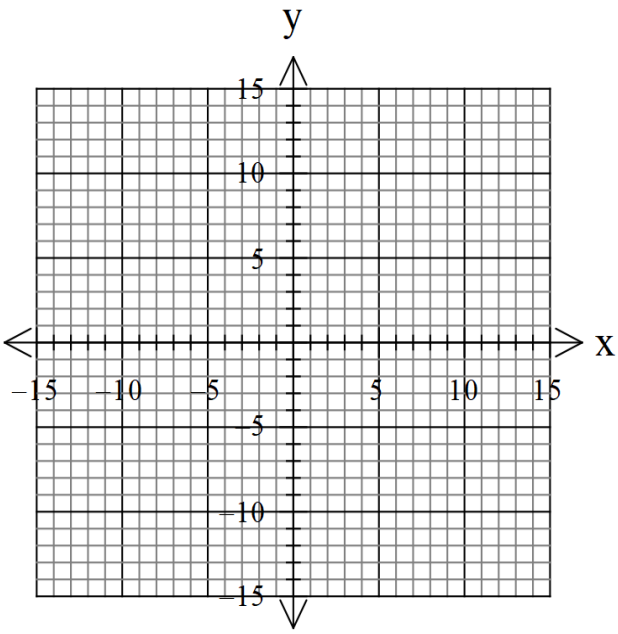
radius:_____



25. $(x + 2)^2 + y^2 = 40$

center:_____

radius:_____

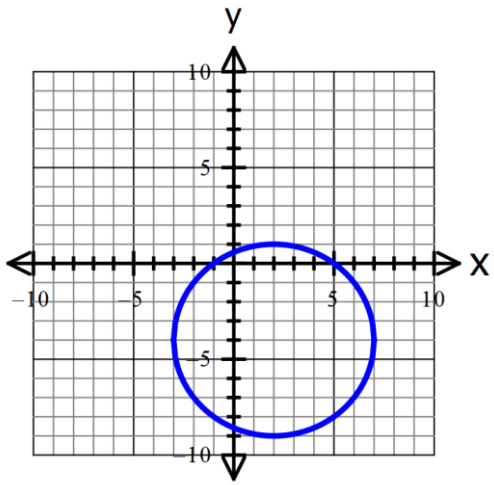


26. Write the standard form of the equation for the circle.

Center: _____

Radius: _____

Equation: _____



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

27. A circle centered at the origin with a diameter of 14.

Center: _____

Radius: _____

Equation: _____

28. A circle with diameter of $\sqrt{10}$ centered at (3, -2)

Center:_____

Radius: _____

Equation: _____

Find the midpoint.

29. $P_1 = (3, -6)\ and\ P_2 = (-7, 8)$

Find the distance between the two points.

30. $P_1 = (3, -6)\ and\ P_2 = (-7, 8)$

Write the standard form of a circle with the given characteristics. (hint: draw a picture of the circle)

31. A circle with center at (0, 4) and a point on the circle at (3, 6)

Center: _____

Radius: _____

Equation: _____

32. A circle with diameter endpoints at $(3,-15)$ and (-5, -15)

Center: _____

Radius: _____

Equation: _____

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

33. $(y+2)^2 = 9(x-4)$

Direction of opening_____

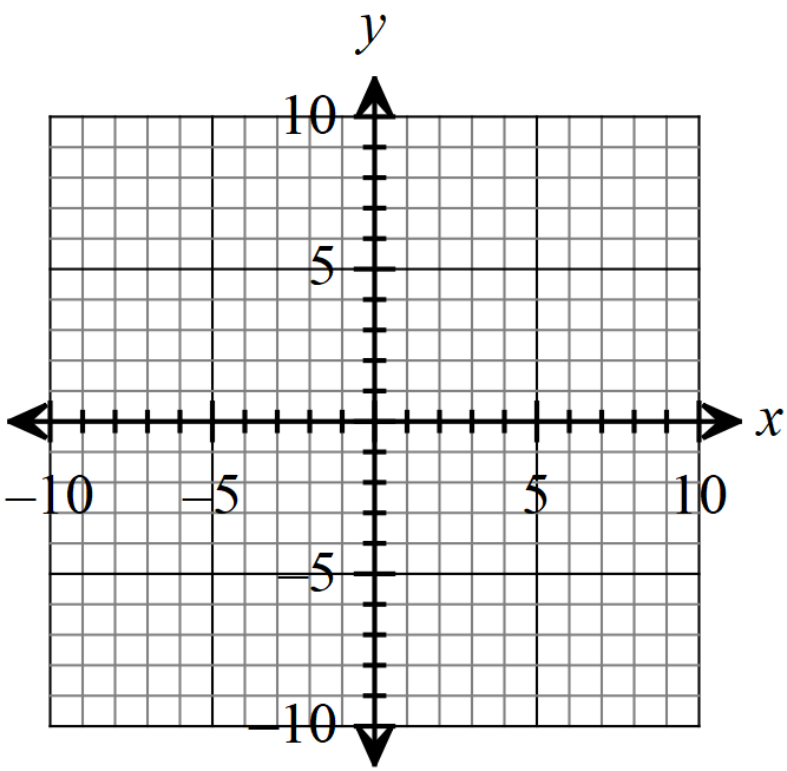
Vertex_____

Focal Width_____

a=_____

Focus_____

Directrix_____



Locate the center, vertices, foci and asymptotes of the hyperbola, then graph.

34. $\dfrac{(x+5)^2}{16}-\dfrac{(y-2)^2}{9}=1$

Center: _____

a=_____

b=_____

c=_____

Vertices: _____

Foci: _____

Slope of the Asymptotes: _____