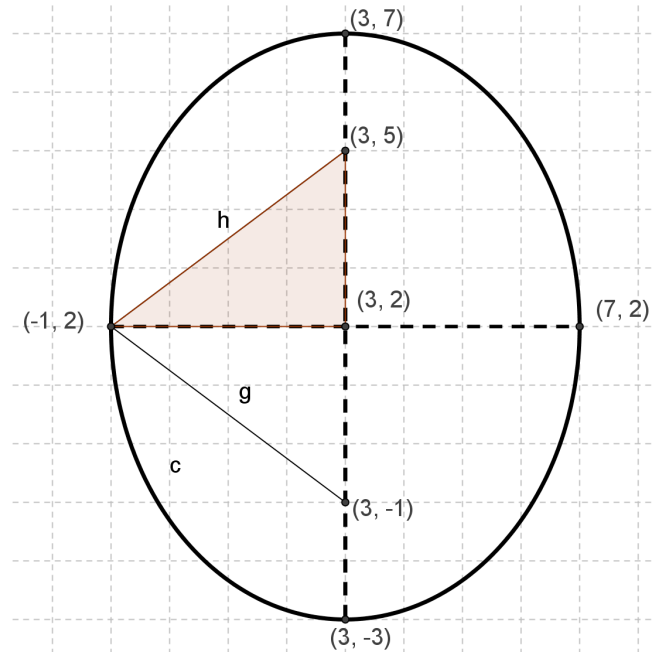


Ellipses

Goal:

- **Graph an ellipse given an equation.**
- **Identify Vertices, Foci, and Major/Minor Axes given the equation**

The equation for the ellipse shown to the right is $\frac{(x-3)^2}{4^2} + \frac{(y-2)^2}{5^2} = 1$



1. Briefly describe the process you would follow to determine the locations of the center, foci, and vertices.

2. What is the length of segment h?

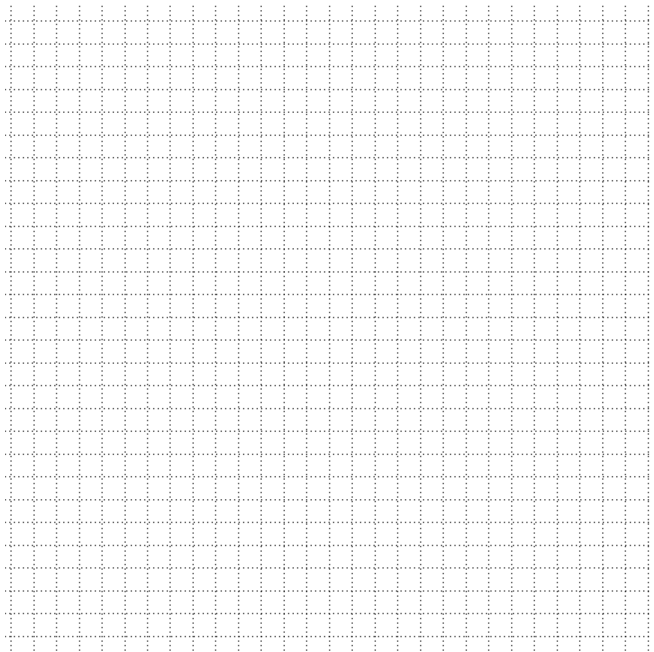
3. What other segment in the diagram possesses the same length as h?

4. Graph the ellipse that possesses the equation $\frac{(x+2)^2}{1^2} + \frac{(y-1)^2}{2^2} = 1$
 Determine the coordinate values of the vertices, foci, and center.

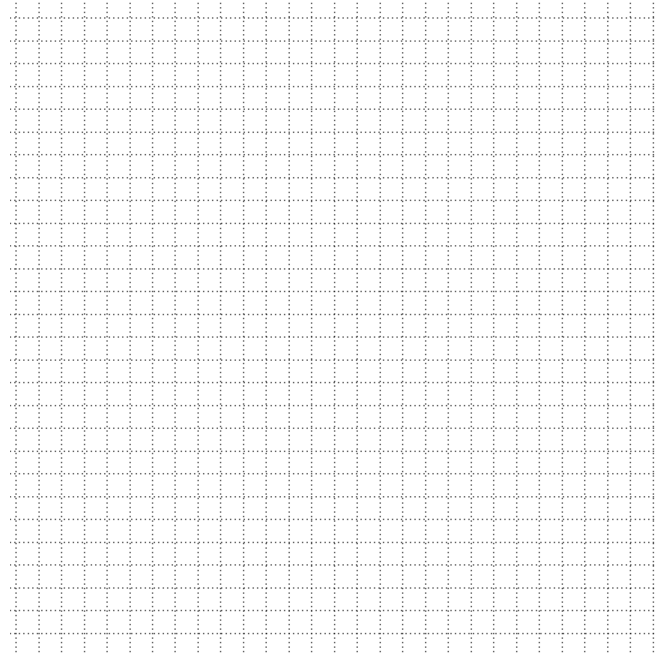
Center:

Vertices:

Foci:



5. Graph the equation $16x^2 + 25y^2 - 96x - 200y = -144$. (Hint: arrange the equation into standard form by completing the square.) Then determine the values of the ellipse's Center, Vertices, and Foci.

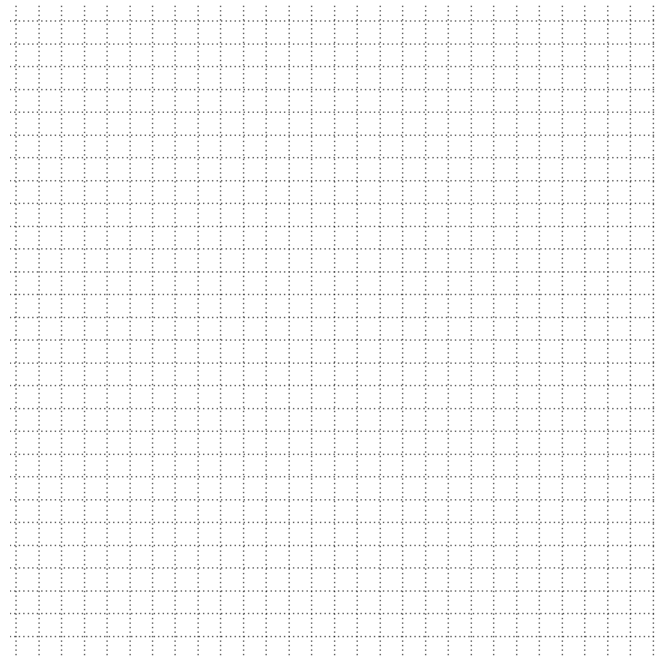


Center:

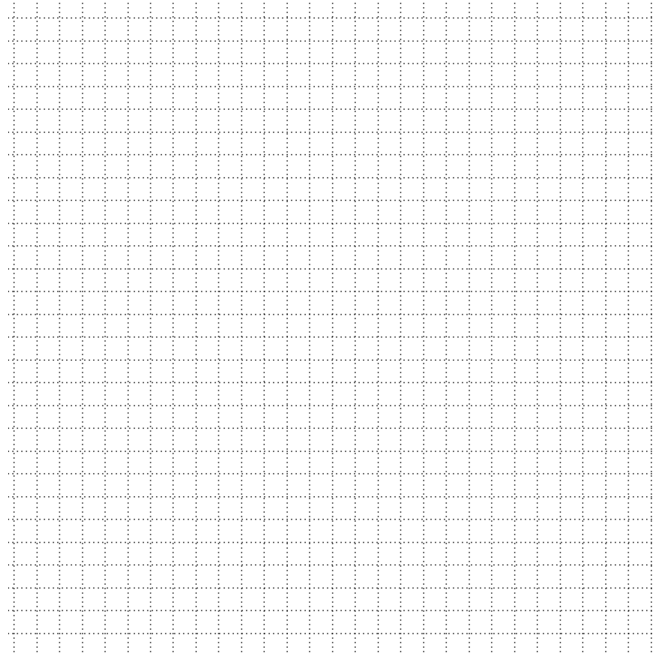
Foci:

Vertices:

6. Write the equation of an ellipse that has the following characteristics: The endpoints of the major axis are at $(-11, 5)$ and $(7, 5)$. The endpoints of the minor axis are at $(-2, 9)$ and $(-2, 1)$. Use the graph to assist you.



7. The major axis has a length of $4\sqrt{13}$ and the foci are at $(-1,1)$ and $(-1, -5)$. Determine the equation of the ellipse. Use the graph to assist you.



:

8. Write the equation of an ellipse that is tangent to the x and y axis and has a center at the ordered pair $(4, -7)$.

