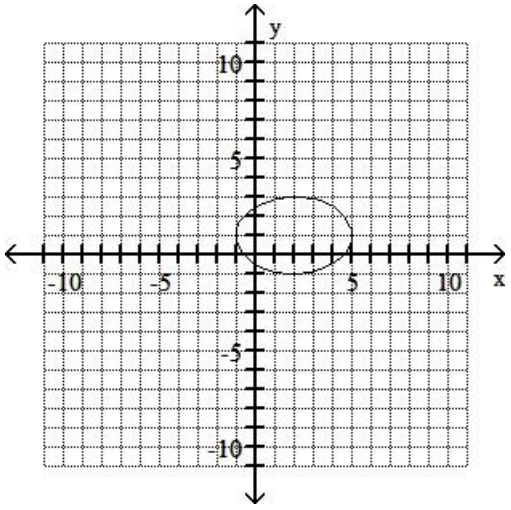
The purpose of this assessment is to help you determine whether you have a clear understanding of graphs of conic sections.

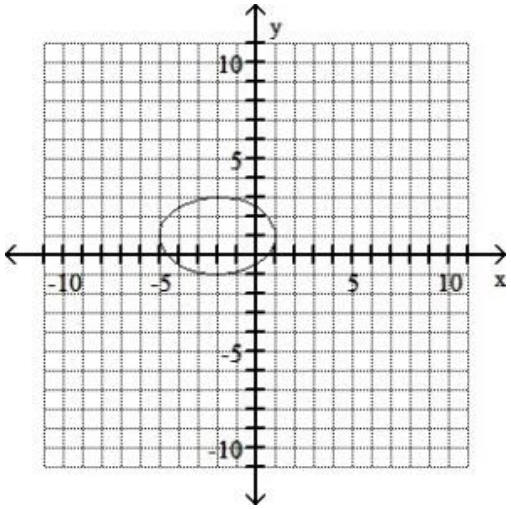
Solve the following problems.

1. Graph the ellipse $\frac{(x-1)^2}{9}+\frac{(y+2)^2}{4}$,and choose the correct graph from the given graphs:

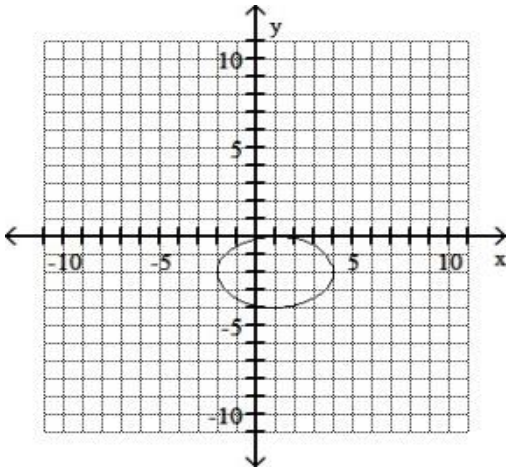
a.



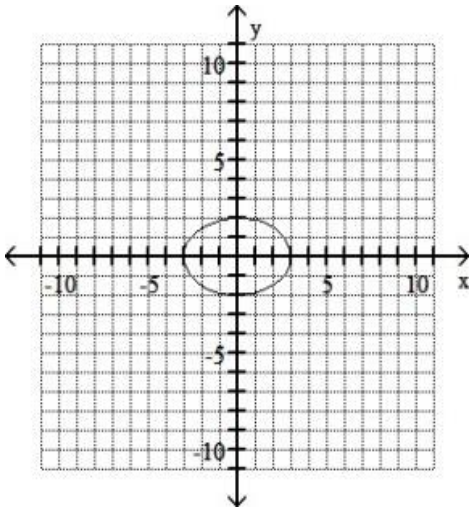
b.



c.



d.

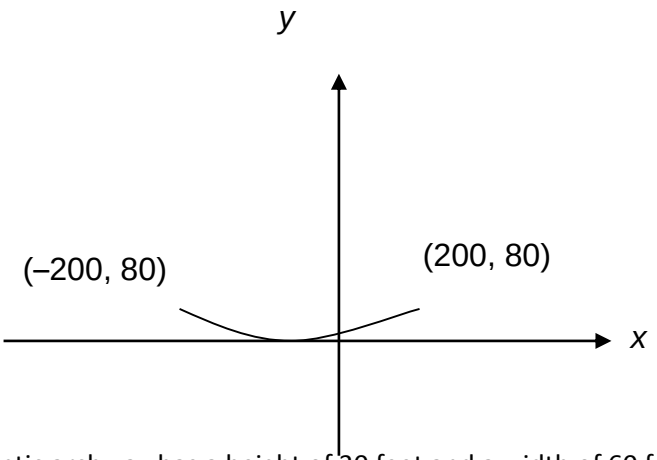


[**Hint:** To graph this ellipse, find the center (*h*, *k*) by comparing the given equation with the standard form of the equation centered at (*h*, *k*). Next, find *a* and *b*. Find the vertices (*h* – *a*, *k*) and (*h* + *a*, *k*). Find the foci (*h* + *c*, *k*) and (*h* – *c*, *k*).]

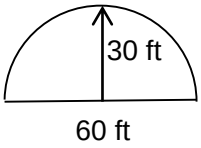
2. Find the vertices of the hyperbola.

$$\frac{x^2}{36} - \frac{y^2}{81} = 1$$

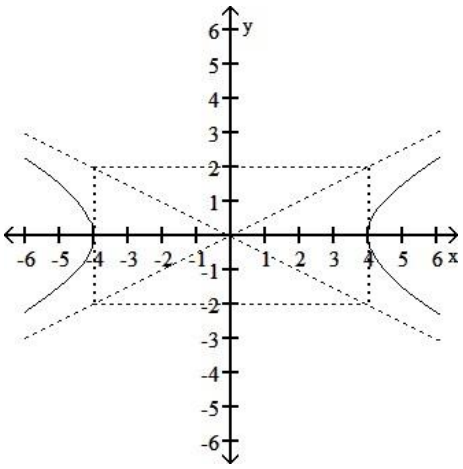
3. A giant parabolic dish has a diameter of 400 meters and a depth of 80 meters.
    a. Find an equation in the form that describes a cross-section of this dish.
    b. If the receiver is located at the focus, how far should it be from the vertex?



4. A semi-elliptic archway has a height of 30 feet and a width of 60 feet as shown in the figure below. Can a truck 21 feet high and 16 feet wide drive under the archway without going into the other lane?



5. Find the eccentricity, foci, and equations of the asymptotes for the graph of the hyperbola below:



Submission Requirements:

Submit your response in a Microsoft Word document of the following specifications:

- Font: Arial; Point 12
- Spacing: Double

Evaluation Criteria:

Your submission will be evaluated against the following criteria:

- Did you include appropriate steps to determine the answers to questions, wherever required?
- Did you submit your answers in an organized fashion that was legible and easy to follow?
- Did you correctly answer each question?