Definition of an Ellipse

An **ellipse** is the set of all points, P, in a plane the sum of whose distances from two fixed points, F_1 and F_2, is constant (see **Figure 9.3**). These two fixed points are called the **foci** (plural of **focus**). The midpoint of the segment connecting the foci is the **center** of the ellipse.
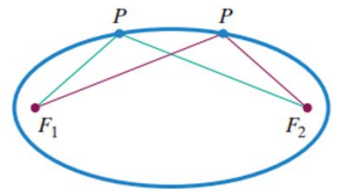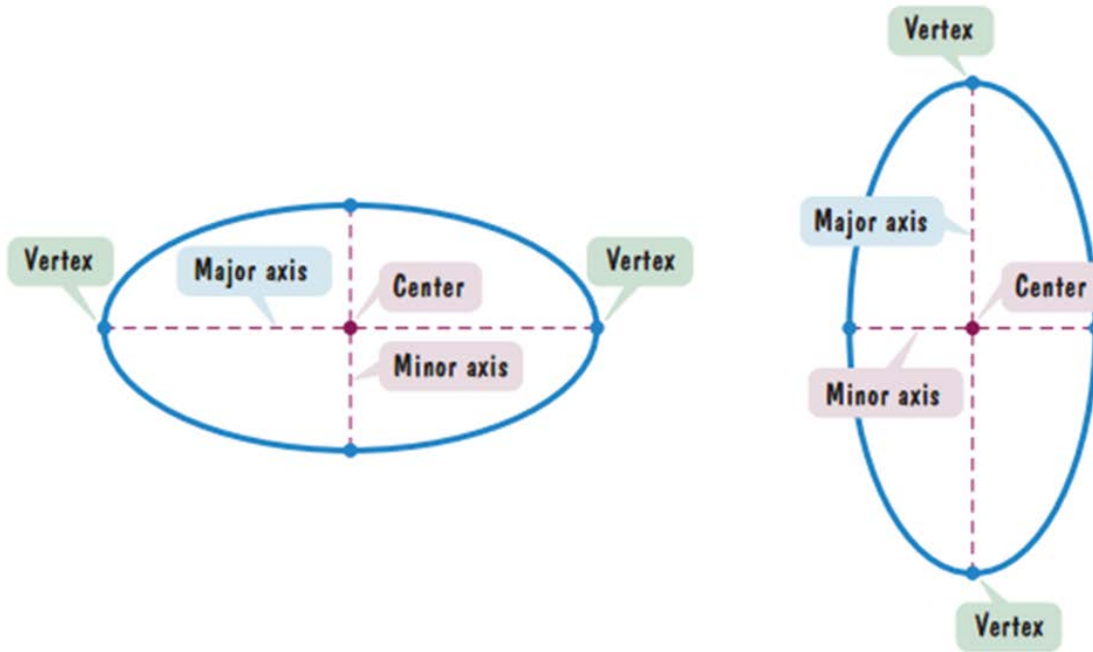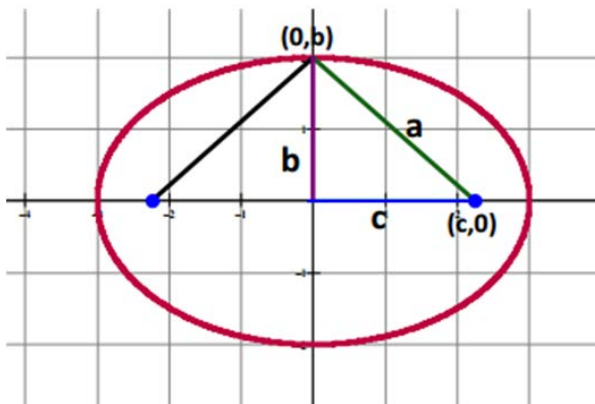
FIGURE 9.3

Relationship between a, b, and c.

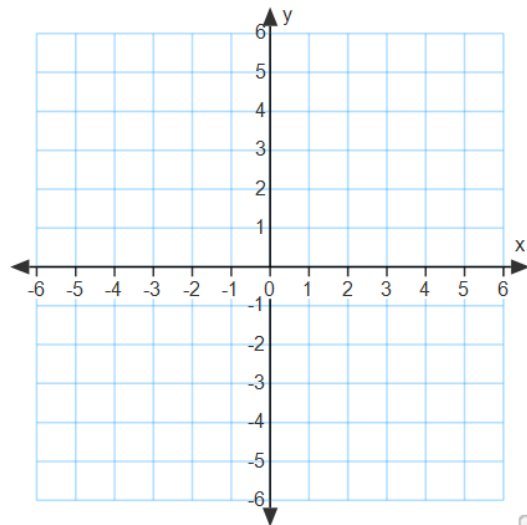*Major Axis:*

Minor Axis:

Foci:

1.)
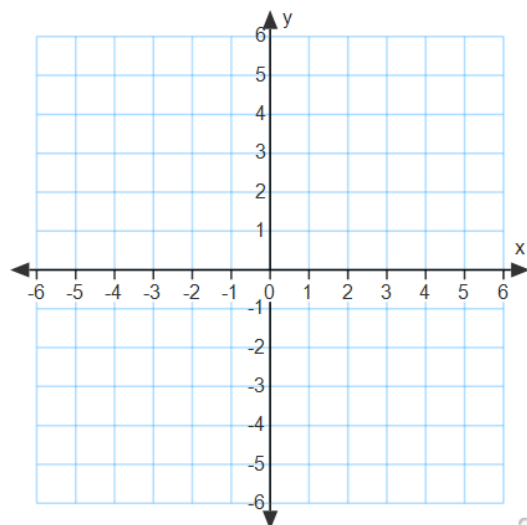
Center:

Vertices:

Co-Vertices:

Foci:

2.)

Center:

Vertices:

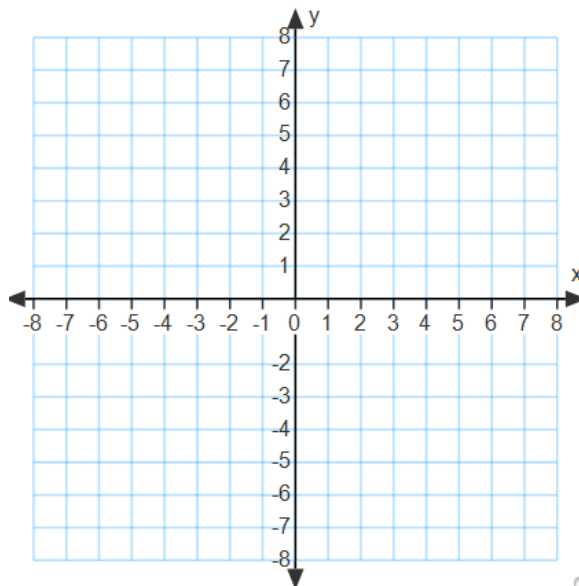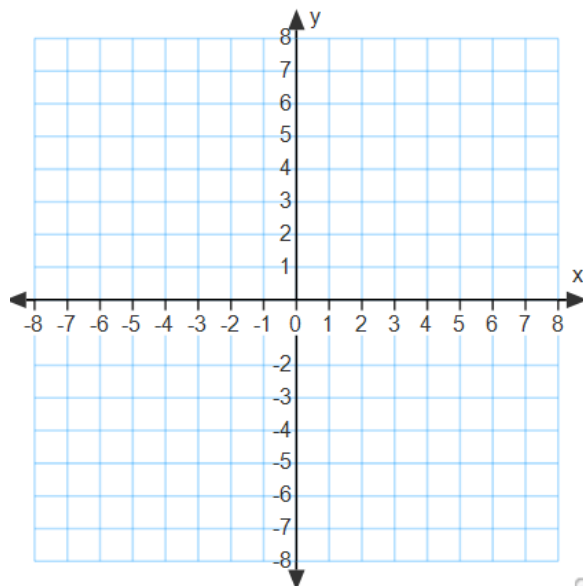Co-Vertices:

Foci:

3.)

Center:

Vertices:

Co-Vertices:
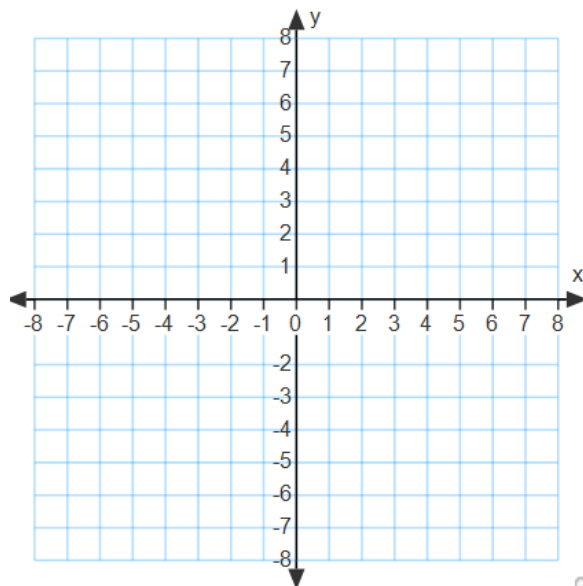
Foci:

4.)

Center:

Vertices:

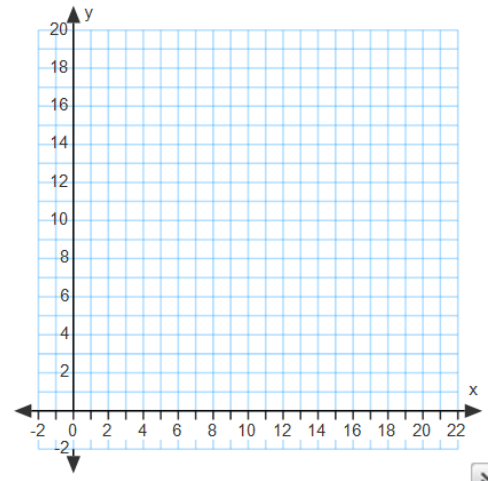Co-Vertices:

Foci:

5.)

Center:

Vertices:

Co-Vertices:

Foci:

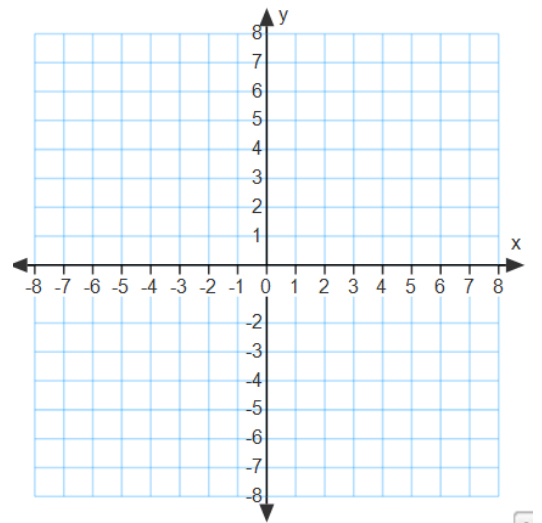*Write the standard equation of an ellipse with the given information:*
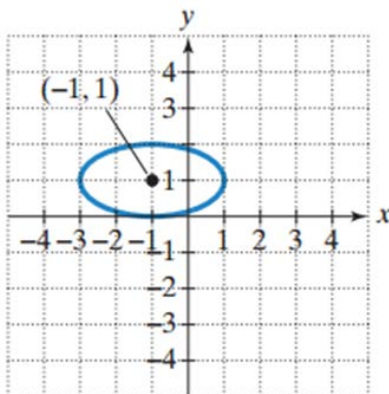
6.) Vertices: _____

Co-Vertices: _____

7.) Vertices: _____
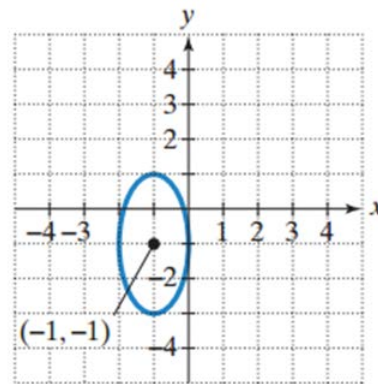
Foci: _____

8.)

a.)

(−1, 1)

b.)

(−1, −1)

9.) A semi-elliptical archway over a one-way road has a height of 10 feet and a width of 40 feet (see Figure 9.11). Your truck has a width of 10 feet and a height of 9 feet. Will your truck clear the opening of the archway?