

## Section 10.2 Ellipses

**Objective:** In this lesson you learned how to write the standard equation of an ellipse, and analyze and sketch the graphs of ellipses.

Course Number

Instructor

Date

### Important Vocabulary

Define each term or concept.

Foci

Vertices

Major axis

Center

Minor axis

### I. Introduction (Pages 704–707)

An **ellipse** is . . .

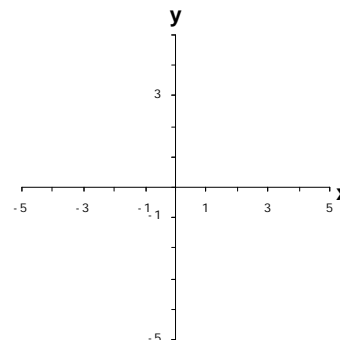
*What you should learn*

The standard form of the equation of an ellipse centered at  $(h, k)$  and having a horizontal major axis of length  $2a$  and minor axis of length  $2b$ , where  $0 < b < a$ , is: \_\_\_\_\_

The standard form of the equation of an ellipse centered at  $(h, k)$  and having a vertical major axis of length  $2a$  and minor axis of length  $2b$ , where  $0 < b < a$ , is: \_\_\_\_\_

In both cases, the foci lie on the major axis,  $c$  units from the center, with  $c^2 =$  \_\_\_\_\_ .

If the center is at the origin  $(0, 0)$ , the equation takes one of the following forms: \_\_\_\_\_ or \_\_\_\_\_ .



**Example 1:** Sketch the ellipse given by  $4x^2 + 25y^2 = 100$  .

**II. Applications of Ellipses** (Page 708)

Describe a real-life application in which parabolas are used.

***What you should learn***

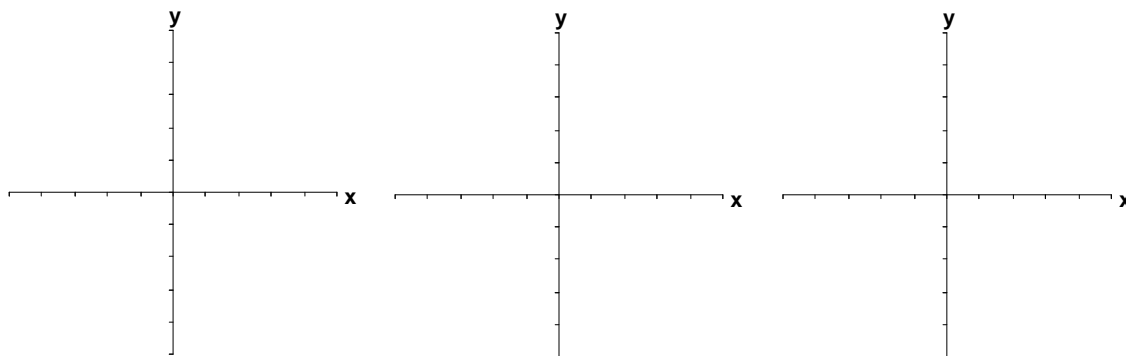
How to use properties of ellipses to model and solve real-life problems

**III. Eccentricity** (Pages 708–709)

\_\_\_\_\_ measures the ovalness of an ellipse. It is given by the ratio  $e = \frac{\text{distance from center to focus}}{\text{distance from center to vertex}}$ . For every ellipse, the value of  $e$  lies between \_\_\_\_\_ and \_\_\_\_\_. For an elongated ellipse, the value of  $e$  is close to \_\_\_\_\_.

***What you should learn***

How to find the eccentricities of ellipses

**Additional notes****Homework Assignment**

Page(s)

Exercises