

Chapter 9 Topics in Analytic Geometry

Section 9.1 Circles and Parabolas

Objective: In this lesson you learned how to recognize conics, write equations of circles in standard form, write equations of parabolas in standard form, and use the reflective property of parabolas to solve problems.

Course Number
Instructor
Date

Important Vocabulary	Define each term or concept.
Directrix	
Focus	
Tangent	

I. Conics (Page 660)

A **conic section**, or **conic**, is . . .

What you should learn
How to recognize a conic as the intersection of a plane and a double-napped cone

Name the four basic conic sections:

In the formation of the four basic conics, the intersecting plane does not pass through the vertex of the cone. When the plane does pass through the vertex, the resulting figure is a(n)

_____, such as

II. Circles (Pages 661–662)

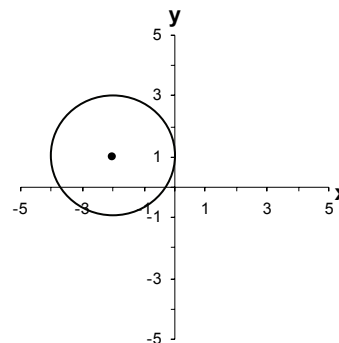
A **circle** is the set of all points (x, y) in a plane that are _____ from a fixed point (h, k) , called the _____ of the circle. The distance r between the center and any point (x, y) on the circle is the _____.

What you should learn
How to write equations of circles in standard form

The **standard form of the equation of a circle** with center (h, k) and radius r is _____.

The standard form of the equation of a circle with radius r and whose center is the origin is _____.

Example 1: The point $(0, 1)$ is on a circle whose center is $(-2, 1)$, as shown in the figure. Write the standard form of the equation of the circle.



III. Parabolas (Pages 663–665)

A **parabola** is . . .

What you should learn
How to write equations of parabolas in standard form

The midpoint between the focus and the directrix is the _____ of a parabola. The line passing through the focus and the vertex is the _____ of the parabola.

The standard form of the equation of a parabola with a vertical axis having a vertex at (h, k) and directrix $y = k - p$ is

The standard form of the equation of a parabola with a horizontal axis having a vertex at (h, k) and directrix $x = h - p$ is

The focus lies on the axis p units (directed distance) from the vertex. If the vertex is at the origin $(0, 0)$, the equation takes one of the following forms:

Example 2: Find the standard form of the equation of the parabola with vertex at the origin and focus $(1, 0)$.

IV. Reflective Property of Parabolas (Pages 665–666)

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

What you should learn

How to use the reflective property of parabolas to solve real-life problems

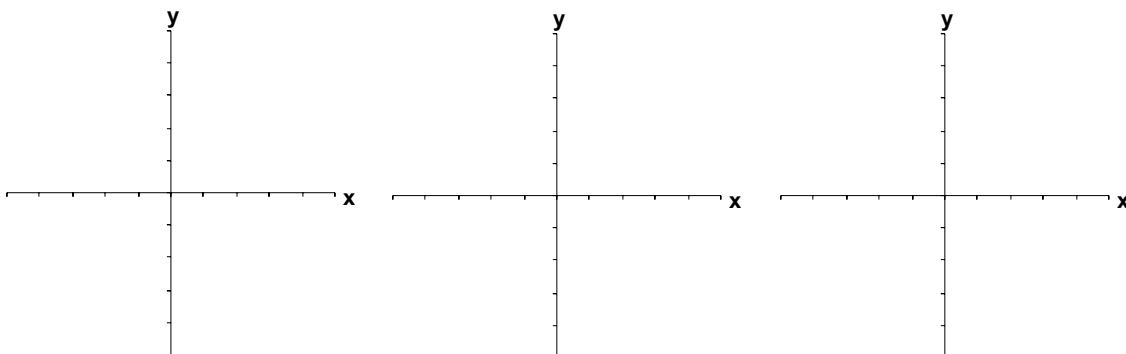
A **focal chord** is . . .

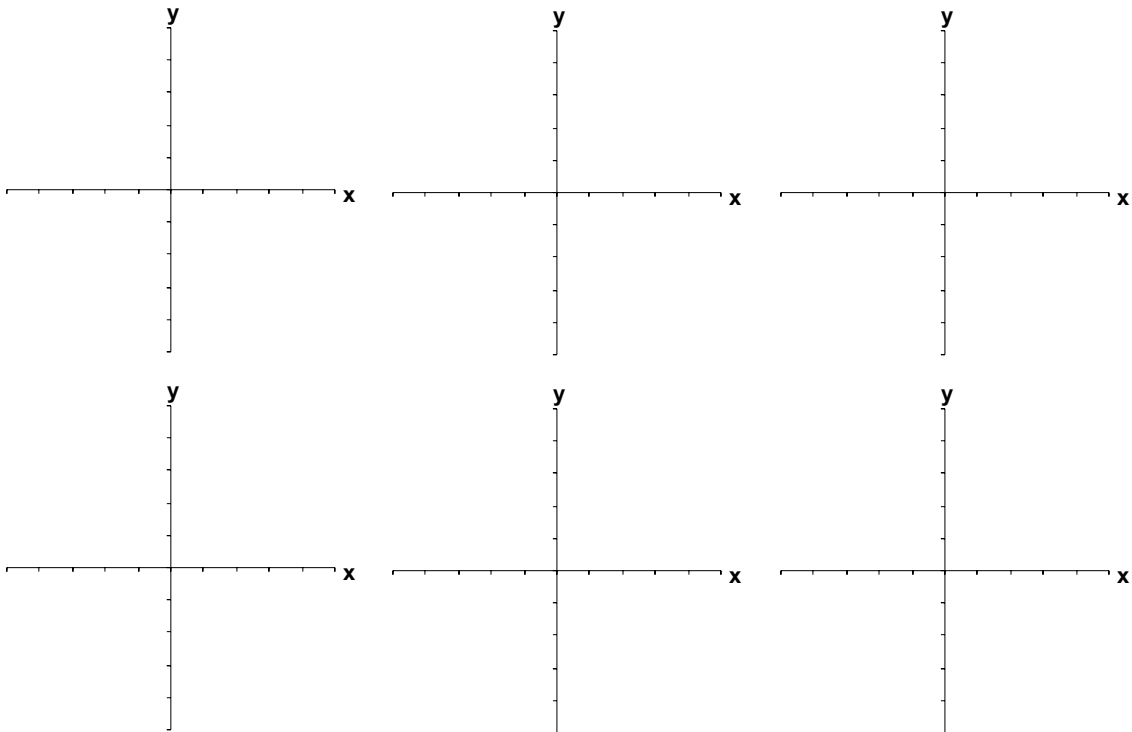
The specific focal chord perpendicular to the axis of a parabola is called the _____.

The reflective property of a parabola states that the tangent line to a parabola at a point P makes equal angles with the following two lines:

1)

2)



Additional notes**Homework Assignment**

Page(s)

Exercises