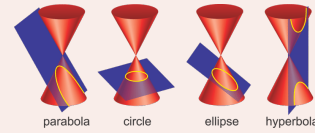


Chapter 10 Quadratic Relations and Conic Sections

We will be exploring conic sections, including parabolas and circles

Section 10-1 Exploring Conic Sections



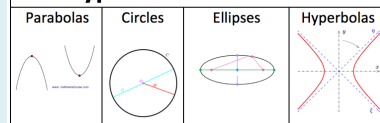
Students will be able to graph and identify conic sections.

If you took a foam cup, and made a planer cut through it, then stamped the cut edge with ink, what shape would the print be?
Would there only be one shape that you could make? Why/why not?



Parabolas form a family of curves that belong to a larger family, conic sections.

4 types of Conic Sections



Each curve has its own shape and properties

Key Concept Conic Sections

A conic section is a curve you get by intersecting a plane and a double cone. By changing the inclination of the plane, you can get a circle, a parabola, an ellipse, or a hyperbola.

Graphing a Circle: $x^2 + y^2 = r^2$ Domain $-3 \leq x \leq 3$
Range $-3 \leq y \leq 3$

What is the graph of $x^2 + y^2 = 9$? What are its lines of symmetry?
What are the domain and range?

Its many lines of symmetry make a circle a special kind of an *ellipse*. In general, an ellipse has only two lines of symmetry.

Graph: $2x^2 + y^2 = 18$. What are the lines of symmetry, domain and range?

$y=0$
 $x=0$ $(0, 0)$

Graph on your graphing calcs and sketch in here:

D: $-3 \leq x \leq 3$
R: $-4.2 \leq y \leq 4.2$

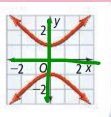
Not all conic sections will have one smooth curve. The *hyperbola* consists of two separate curves called branches.

What is the graph of $x^2 - y^2 = 9$? What are the domain and range?

Domain: $x \leq -3$ OR $x \geq 3$
Range: R_s

In this chapter, we will be looking more closely at circles and parabolas. You should be able to identify a curve by its shape and its features.

4. What are the center and intercepts of the conic section? What are the domain and range?



No x-int
 y-int: $(0, 1)$ $(0, -1)$

Dom: \mathbb{R}
 Range: $y \geq 1$ or $y \leq -1$

pg. 619 #43.

Graph each circle with the given radius or diameter so that the center is at the origin. Then write the equation for the circle.

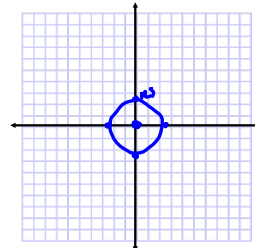
diameter 2.5

$$x^2 + y^2 = r^2$$

$$\frac{2.5}{2} = 1.25$$

$$x^2 + y^2 = 1.25^2$$

$$x^2 + y^2 = 1.5625$$



10.1 Homework

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 #8 - 20 (4th), 22-33 all,
 38 - 42 evens