

**EQUATION OF A CIRCLE****LEARNING GOALS**

Students will:

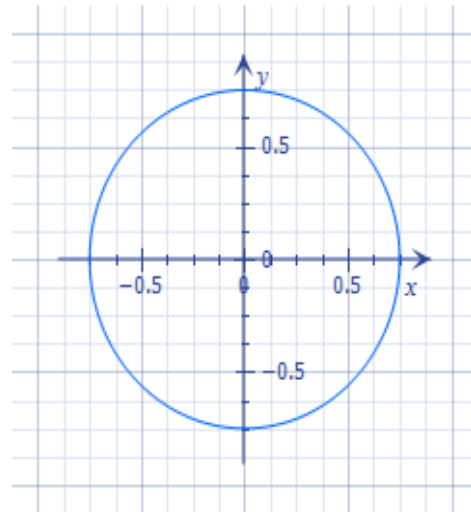
- Learn how to develop an equation for a circle.

**KEY IDEA**

The equation of a circle centered on the origin  $(0,0)$  with radius  $r$  is  $x^2 + y^2 = r^2$ . It follows that the radius is  $r = \sqrt{x^2 + y^2}$ .

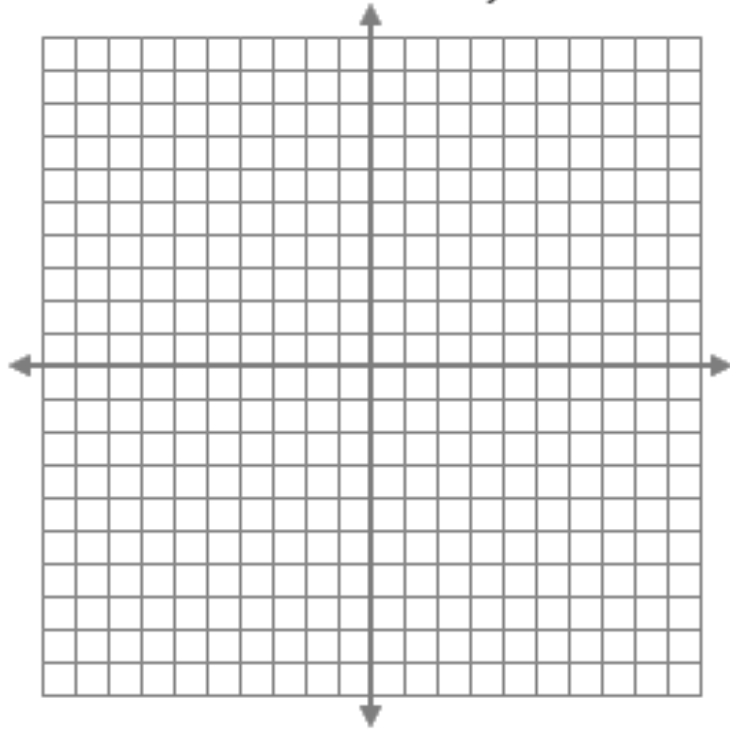
**EXAMPLE: WRITE THE EQUATION OF A CIRCLE FOR A GIVEN RADIUS**

Write the equation of a circle with center  $(0, 0)$  and a radius of  $\frac{3}{4}$  units.



EXAMPLE: SKETCH THE GRAPH OF A CIRCLE FOR A GIVEN EQUATION

A circle is defined by the equation  $x^2 + y^2 = 25$ . Sketch a graph of this circle.



## EXAMPLE: WORD PROBLEM APPLICATION

A stone is dropped into a pond, creating a circular ripple. The radius of the ripple increases by 5.3 m/s. Determine an equation that models the circular ripple, 10 s after the stone is dropped. Determine if after 10 s the ripple has reached a toy boat floating on the pond 28 m east and 45 m north.

