

**CIRCLE**

(1) center: locates the circle anywhere on the graph

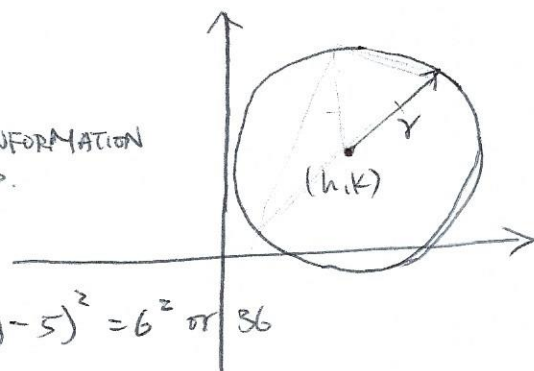
(2) Radius: sizes the circle.

↳  $2r = \text{Diameter}$ ,  $2\pi r = \text{Circumference}$ .

Standard Form Equation with center  $(h, k)$  and radius  $r$ :

$$(x-h)^2 + (y-k)^2 = r^2$$

~~DON'T SIMPLIFY~~  
THIS FORM KEEPS INFORMATION MORE OBVIOUS.



Example

(1) center  $(3, 5)$ , radius 6.

Equation for this circle is  $(x-3)^2 + (y-5)^2 = 6^2$  or 36

(2) center  $(0, 2)$  radius 3

Equation for this circle is  $(x-0)^2 + (y-2)^2 = 3^2$   
 $\Leftrightarrow x^2 + (y-2)^2 = 9$

(3) center  $(-4, 0)$  radius  $\sqrt{10}$

$(x+4)^2 + (y-0)^2 = (\sqrt{10})^2 \Leftrightarrow (x+4)^2 + y^2 = 10$

(4) center  $(0, 0)$ , radius 0.05

$(x-0)^2 + (y-0)^2 = 0.05^2 \Leftrightarrow x^2 + y^2 = 0.05^2$  or  $0.0025$   
 $(\frac{1}{20})^2 = (\frac{1}{400}) = 0.0025$   
 center at the origin

(5) Given the equation  $(x-10)^2 + (y-2)^2 = 100$ .

What's the radius?  $\sqrt{100} = 10$ .

Where's the center?  $(10, 2)$

(6) Given the equation  $(x+7)^2 + y^2 = 40$ .

center  $(-7, 0)$ , radius  $\sqrt{40} = 2\sqrt{10} \approx 6.32$

$$(7) \quad x^2 + y^2 = \frac{4}{25}$$

center (0,0) , radius  $\sqrt{\frac{4}{25}} = \frac{2}{5} = 0.4$  .