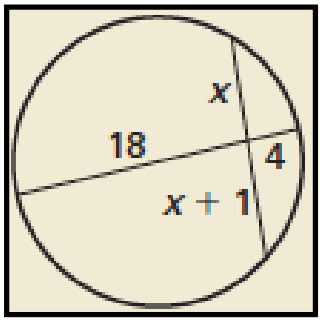
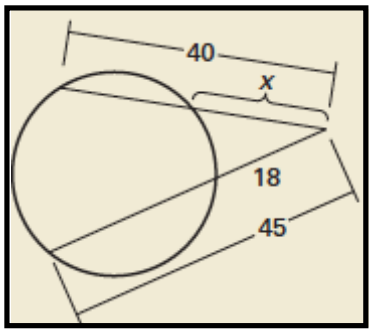
Bellwork
03/23/2012

Find the value of *x*. Round to the nearest tenth, if necessary.

1. 

2. 

Geometry
10.7 Write and Graph Equations of Circles
Standard(s): 3, 10

Vocabulary:

Let (x, y) represent any point on a circle with center at the origin and radius r. By the Pythagorean Theorem,

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

This is the equation of a circle with radius r and center at the origin.

KEY CONCEPT *For Your Notebook*

Standard Equation of a Circle

The standard equation of a circle with center (h, k) and radius r is:

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

$(x-4)^2+(y+6)^2=49$

$(4,-6), r=7$

Write an Equation Given Info

Write the standard equation using the given center and radius.

h k

Center: (-3,0) Radius: 5

$$(x+(+3))^2+(y-0)^2=5^2$$

$$(x+3)^2+y^2=25$$

h k

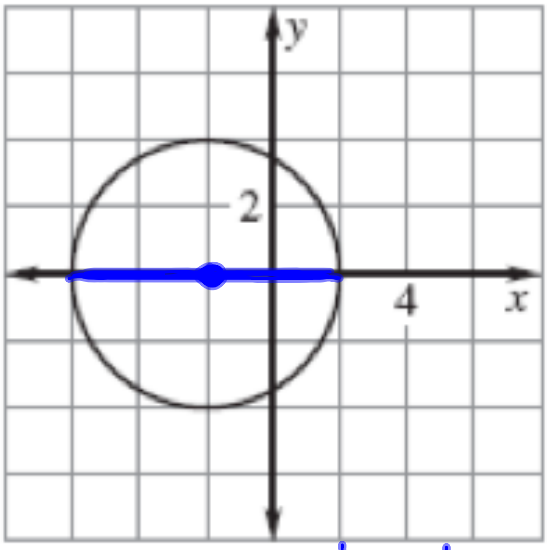
Center: (4,-7) Radius: 13

$$(x-4)^2+(y+(+7))^2=13^2$$

$$(x-4)^2+(y+7)^2=169$$

Write an Equation Given a Graph

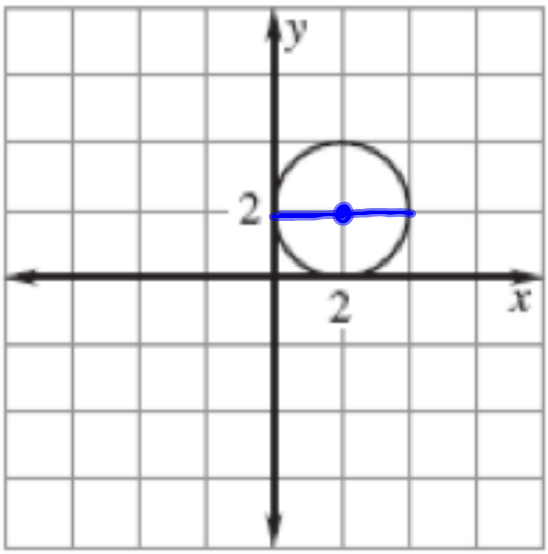
Write the standard equation.



$r = 4$, $(h, k) = (-2, 0)$

$(x+(+2))^2 + (y-0)^2 = 4^2$

$(x+2)^2 + y^2 = 16$



$r = 2$, $(2, 2)$

$(x-2)^2 + (y-2)^2 = 2^2$

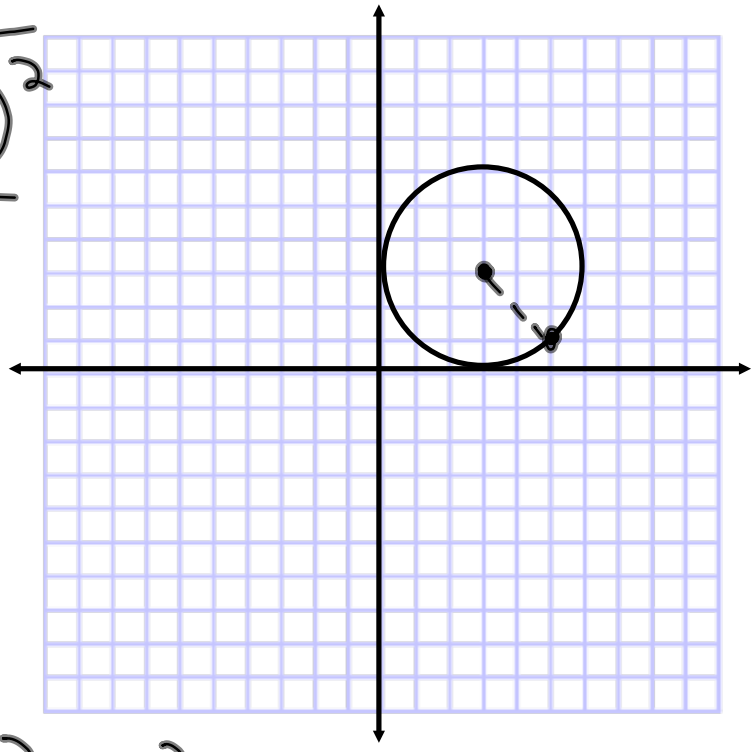
$(x-2)^2 + (y-2)^2 = 4$

Given a Center and Point on Circle

Use the given information to write the standard equation of the circle.

h k

Center: (2,4) **Point: (-3, 16)**



$\sqrt{(-3-2)^2+(16-4)^2}$

$\sqrt{(-5)^2+(12)^2}$

$\sqrt{25+144}$

$\sqrt{169}$

$r=13$

$(x-2)^2+(y-4)^2=13^2$

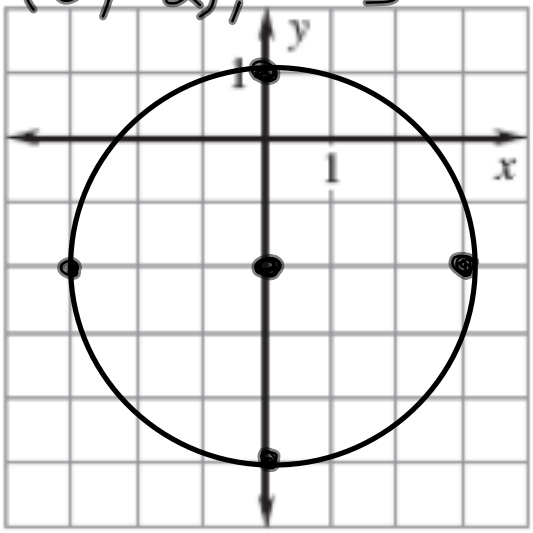
$(x-2)^2+(y-4)^2=169$

Graphing a Standard Equation

Use the given information to write the standard equation of the circle.

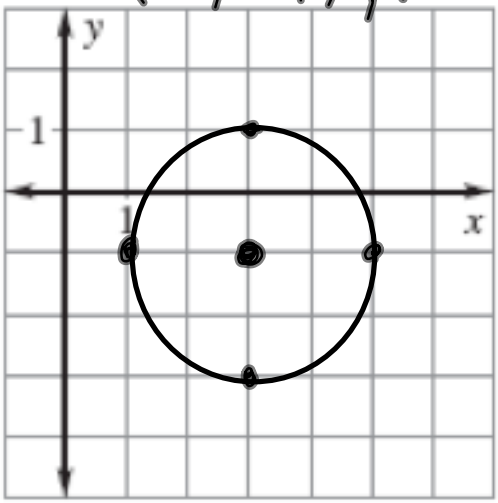
$x^2+(y+2)^2=9$

$(0,-2), r=3$



$(x-3)^2+(y+1)^2=4$

$(3,-1), r=2$



Complete the Square

Find the center and radius of the circle.

13.

$x^2+y^2+4x+6y-36=0$

$(x^2+4x+4)+(y^2+6y+9)=36+4+9$

$(x+2)^2+(y+3)^2=49$

$(-2,-3),\ r=7$

$x^2+y^2+2x-35=0$

Homework Assignment

Worksheet 10.7B