Name _____ Date _____

Finding the Equation of Circles Problems - Guided Lesson Explanation

Explanation#1

Step 1) The standard equation of a circle with center C(h, k) and radius r is:

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

Step 2) Given (h, k) = (-8, -3) and r= 2

Step 3) Substitute h, k and r in the standard equation

$$(x - (-8))^2 + (y - (-3))^2 = 2^2$$

$$(x + 8)^2 + (y + 3)^2 = 4$$

Explanation#2

Step 1) The center of the circle is the midpoint of the line segment making the diameter AB.

The midpoint formula is used to find the coordinates of the center C of the circle.

x coordinates of C= (-1 + 3)/2= 1

y coordinates of C= (2 + 2)/2= 2

Step 2) The radius is half the distance between A and B.

$r= (1/2)([3-(-1)]^2+[2-2]^2)^{1/2}$

$r= (1/2)(4^2+0^2)^{1/2}$

r= 2

Step 3) The coordinate of C and the radius are used in the standard equation of the circle to obtain the equation:

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

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

Name _____ Date _____

Explanation # 3

Step 1) The standard equation of a circle with center C (h, k) and radius r is:

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

Step 2) Given (h, k) = (8, 4) and r= 4

Step 3) Substitute h, k and r in the standard equation

$$(x - 8)^2 + (y - 4)^2 = 4^2$$

$$(x - 8)^2 + (y - 4)^2 = 16$$