

In general, we can write the equation of a circle if we know it's center and radius. This is called **standard form** or **center-radius form** and it looks like:

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

Where **(h, k)** is the center and **r** is the radius.

**C Level Problems:**

1) Write the equation of a circle with center (6, 1) and radius 7.

2) Write the equation of a circle with center (5, -4) and radius 9.

3) a) Identify the center and radius of the circle with equation  $(x - 4)^2 + (y - 3)^2 = 4$

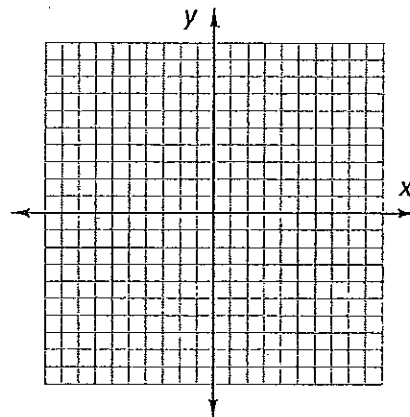
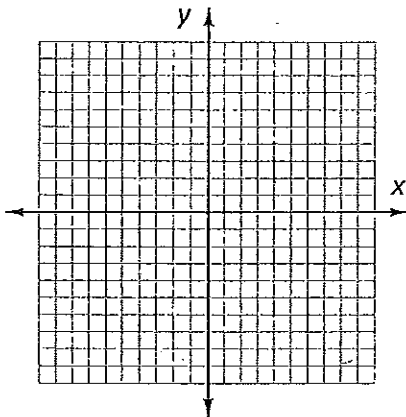
4) Identify the center and radius of the circle with equation  $(x + 3)^2 + (y - 4)^2 = 25$

center: \_\_\_\_\_ radius: \_\_\_\_\_

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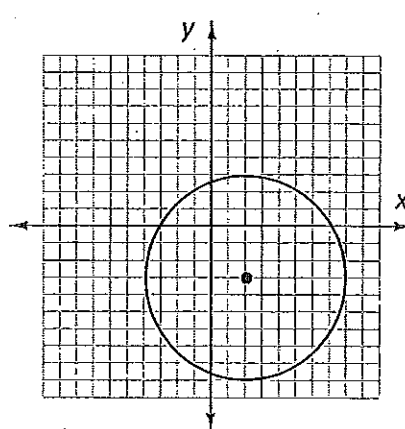
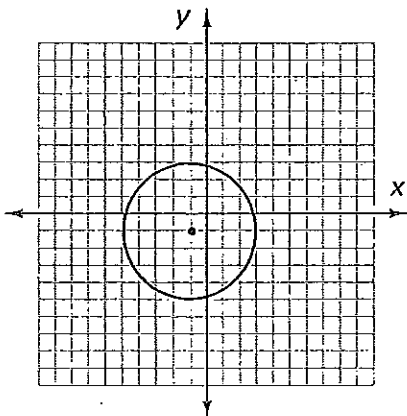
b) Graph the circle below.

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5) Write the center, radius and equation of the circle below

6) Write the center, radius and equation of the circle below



**B level problems:**

7) Write the equation of a circle with (0, 4) and (0, 6) as endpoints of a diameter.

8) Write the equation of a circle with center (4, 3) and a radius that ends at (4, -2)

9) Identify the center and radius of a circle with equation  $(x + 3)^2 + (y - 2.5)^2 = 11$

10) Identify the center and radius of a circle with equation  $(x - 3.2)^2 + (y + 11)^2 = 110$

**A level problems:**

11) Complete the square to put the equation of the circle into standard form:  $x^2 - 4x + y^2 + 8y - 5 = 0$

12) Complete the square to put the equation of the circle into standard form:  $x^2 + 2x + y^2 + 6y - 23 = 0$

13) Identify the center and radius of:  $x^2 - 12x + y^2 + 2y = -36$

14) Write the equation of a circle with (6, 1) and (-1, -2) as endpoints of a diameter.

15) Write the equation of a circle with center (-2, 1) and the point (1, 2) on the circumference of the circle.