Section 2.4 circles

The Standard Form of the Equation of a Circle

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

(h, k) is the center
r is the radius
(x, y) is any point on the circle
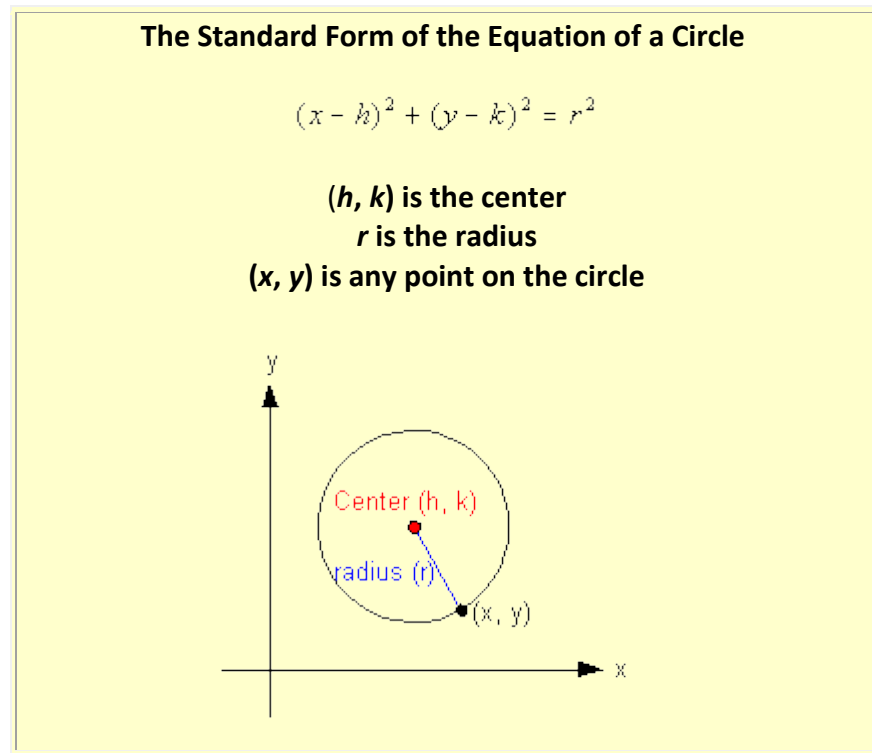
#1-8: Write the standard form of the equation of the circle with the given radius (r) and center (h,k) then sketch a graph of the circle.

1) r = 2 (h,k) = (3, -1)

2) r = 4   (h,k) = (5, -4)

3) r = 3 (h,k) = (-4,1)

4) r = 5 (h,k) = (-6,3)

5) r = $\frac{1}{2}$ (h,k) = (-3,-2)

6) $r = \frac{1}{3}$ (h,k) = (1, 3)

7) r = 5 (h,k) = (0,2)

8) r = 8 (h,k) = (0,3)

#9-18: rewrite so that the equation is written in the standard form of a circle. Identify the radius and the center. Then sketch a graph.

9) $x^2 + y^2 -6x + 2y + 9 = 0$ 10) $x^2 + y^2 -2x + 4y - 4 = 0$

11) $x^2 + y^2 - 4x - 6y = -4$ 12) $x^2 + y^2 + 2x + 6y = 6$

13) $x^2 + y^2 - 6y = 16$ 14) $x^2 + y^2 - 4y = 21$

15) $x^2 - 6x + y^2 = 40$ 16) $x^2 - 4x + y^2 = 5$

17) $x^2 + y^2 - 4 = 0$ 18) $x^2 + y^2 + 4x + 3 = 0$

#19 - 22: Find the standard form of the equation of each circle. Identify the radius.

19) Center (-2, 3) contains the point (1, 7)

20) Center (1, 5) contains the point (5, -3)

21) Center (5, 2) contains the point (5,9)

22)   Center (4,1) contains the point (4, 6)