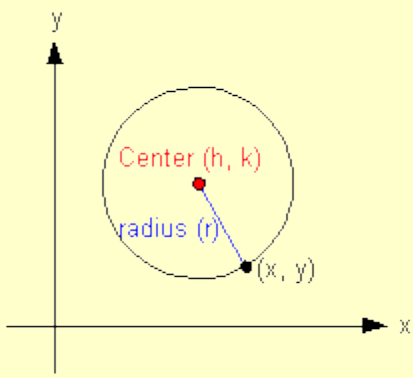
Section 2.3 circles

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. 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) $3x^2 + 3y^2 - 12 = 0$

18) $2x^2 + 2y^2 + 8x + 6 = 0$

#19 - 26: Find the standard form of the equation of each circle. It may help to sketch a graph of the circle before you start your algebra.

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

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

21) Center (5, 2) tangent to the y-axis

22) Center (4,1) tangent to the y-axis

23) Has a diameter with endpoints (1,4) and (-3,2)

24) Has a diameter with endpoints (1, 5) and (3, 11)

25) Has a diameter with endpoints (0,6) and (4,6)

26) Has a diameter with endpoints (5, 0) and (5, 4)