

9.2 Circles

Standard Form

$$(x-h)^2 + (y-k)^2 = r^2 \quad \text{center: } (h, k) \quad r: \text{radius}$$

ex: Write the equation of the circle in standard form

a) center: $(-5, 6)$ Radius: 4
 $(x+5)^2 + (y-6)^2 = 16$

b) center: $(3, 4)$ Point on Circle: $(0, 6)$
 $(0-3)^2 + (6-4)^2 = r^2$
 $(-3)^2 + (2)^2 = r^2$
 $9 + 4 = r^2$
 $13 = r^2$
 $(x-3)^2 + (y-4)^2 = 13$

c) Center: $(-2, 7)$ Area: 16π
 $(x+2)^2 + (y-7)^2 = 16$

$$A = \pi r^2$$
$$C = 2r\pi$$

d) $x^2 + y^2 + 10x + 8y - 23 = 0$

$$x^2 + 10x + 25 + y^2 + 8y + 16 = 23$$

$$\frac{10}{2} = 5$$
$$5^2 = 25$$

$$\frac{8}{2} = 4$$
$$4^2 = 16$$

$$(x+5)^2 + (y+4)^2 = 64$$