# CIRCLES

**Complete the square (if necessary) to find the center and radius. Then draw the graph:**

**1.** $x^2 + y^2 = 49$                **2.** $x^2 + y^2 = 4$

**3.** $x^2 + y^2 + 4x - 5 = 0$                **4.** $x^2 + y^2 - 14y + 48 = 0$

**5.** $x^2 + y^2 - 10x + 8y + 5 = 0$                **6.** $x^2 + y^2 + 12x - 2y + 21 = 0$

**Write an equation (in the form $x^2 + y^2 + ax + by + c = 0$) of the circle described:**

**7.** Center at (7, 5), containing (3, -2)                **8.** Center at (-4, 6), containing (-2, -3)

**9.** Center at (-9, -2), containing the origin                **10.** Center at (5, -4), containing (0, 3)

**11.** Center at the origin, containing (-6, -8)                **12.** Center at the origin, containing (-5, 1)