

Use the information provided to write the standard form equation of each circle.

- 9) Center: $(-9, 4)$
Radius: 6

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

$$(x + 9)^2 + (y - 4)^2 = 36$$

- 10) Center: $(8, -6)$
Radius: $\sqrt{66}$

$$(x - 8)^2 + (y - (-6))^2 = \sqrt{66}^2$$

$$(x - 8)^2 + (y + 6)^2 = 66$$

- 11) Center: $(-1, -6)$
Circumference: 12π

$$\frac{2\pi r}{2\pi} = \frac{12\pi}{2\pi}$$

$$r = 6$$

$$(x - (-1))^2 + (y - (-6))^2 = 6^2$$

$$(x + 1)^2 + (y + 6)^2 = 36$$

- 12) Center: $(9, 16)$
Circumference: 6π

$$\frac{2\pi r}{2\pi} = \frac{6\pi}{2\pi}$$

$$r = 3$$

$$(x - 9)^2 + (y - 16)^2 = 3^2$$

$$(x - 9)^2 + (y - 16)^2 = 9$$

- 13) Center: $(15, -11)$
Area: 7π

$$\pi r^2 = 7\pi$$

$$r^2 = 7$$

$$r = \sqrt{7}$$

$$(x - 15)^2 + (y - (-11))^2 = \sqrt{7}^2$$

$$(x - 15)^2 + (y + 11)^2 = 7$$

- 14) Center: $(\sqrt{146}, -15)$
Area: 4π

$$\pi r^2 = 4\pi$$

$$r^2 = 4$$

$$r = 2$$

$$(x - \sqrt{146})^2 + (y - (-15))^2 = 2^2$$

$$(x - \sqrt{146})^2 + (y + 15)^2 = 4$$

- 15) Center: $(-3, 6)$
Point on Circle: $(-9, 16)$

$$d = \sqrt{(-9 - (-3))^2 + (16 - 6)^2}$$

$$= \sqrt{(-6)^2 + 10^2}$$

$$= \sqrt{36 + 100}$$

$$= \sqrt{136} = 2\sqrt{34}$$

$$(x - (-3))^2 + (y - 6)^2 = \sqrt{136}^2$$

$$(x + 3)^2 + (y - 6)^2 = 136$$

- 16) Center: $(0, 9)$
Point on Circle: $(-5, 13)$

$$d = \sqrt{(-5 - 0)^2 + (13 - 9)^2}$$

$$d = \sqrt{25 + 16}$$

$$d = \sqrt{41}$$

$$(x - 0)^2 + (y - 9)^2 = \sqrt{41}^2$$

$$x^2 + (y - 9)^2 = 41$$

- 17) Ends of a diameter: $(7, 16)$ and $(-11, -14)$

$$M = \left(\frac{7 + (-11)}{2}, \frac{16 + (-14)}{2} \right) = (-2, 1) \text{ Center}$$

$$d = \sqrt{(7 - (-2))^2 + (16 - (-1))^2}$$

$$= \sqrt{81 + 225}$$

$$= \sqrt{306}$$

$$(x - (-2))^2 + (y - 1)^2 = \sqrt{306}^2$$

$$(x + 2)^2 + (y - 1)^2 = 306$$

- 18) Ends of a diameter: $(1, 13)$ and $(5, 17)$

$$M = \left(\frac{1 + 5}{2}, \frac{13 + 17}{2} \right) = (3, 15)$$

$$d = \sqrt{(1 - 3)^2 + (13 - 15)^2}$$

$$= \sqrt{4 + 4}$$

$$= \sqrt{8}$$

$$(x - 3)^2 + (y - 15)^2 = \sqrt{8}^2$$

$$(x - 3)^2 + (y - 15)^2 = 8$$