

Day 10 - Circles

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

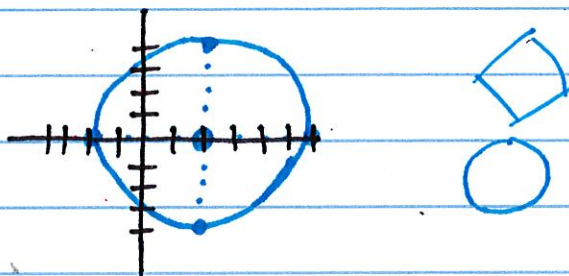
Center: $(h, k) \Rightarrow$ (opposite h , opposite k)

radius: $\sqrt{r^2}$

Example 1: Graph $(x-2)^2 + y^2 = 16$

Center: $(2, 0)$

radius: $\sqrt{16} = 4$



Example 2: Write the equation in standard form.

(a) center = $(1, 3)$ radius = 5

$$(x-1)^2 + (y-3)^2 = 25$$

(b) center = $(-1, 4)$ and $(2, 2)$ is a point on the circle.

$$\text{radius} = \text{distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$= \sqrt{(2 - (-1))^2 + (2 - 4)^2}$$

$$= \sqrt{9 + 4}$$

$$\text{radius} = \sqrt{13} \quad \text{center} = (-1, 4)$$

$$(x+1)^2 + (y-4)^2 = 13$$

$$r^2 = (\sqrt{13})^2$$

(c) center = (0, 3) Area = 81π

$$A = \pi r^2$$
$$\frac{81\pi}{\pi} = \frac{\pi r^2}{\pi}$$
$$\sqrt{81} = \sqrt{r^2}$$
$$9 = r$$

$$(x-0)^2 + (y-3)^2 = 81$$

$$\boxed{x^2 + (y-3)^2 = 81}$$