

# Circles

Wednesday, September 27, 2017 1:14 PM

$$1. (x-h)^2 + (y-k)^2 = r^2$$

$(h, k)$  — center

\* switch  
both signs.

$$\text{radius} = \sqrt{r^2} = r$$

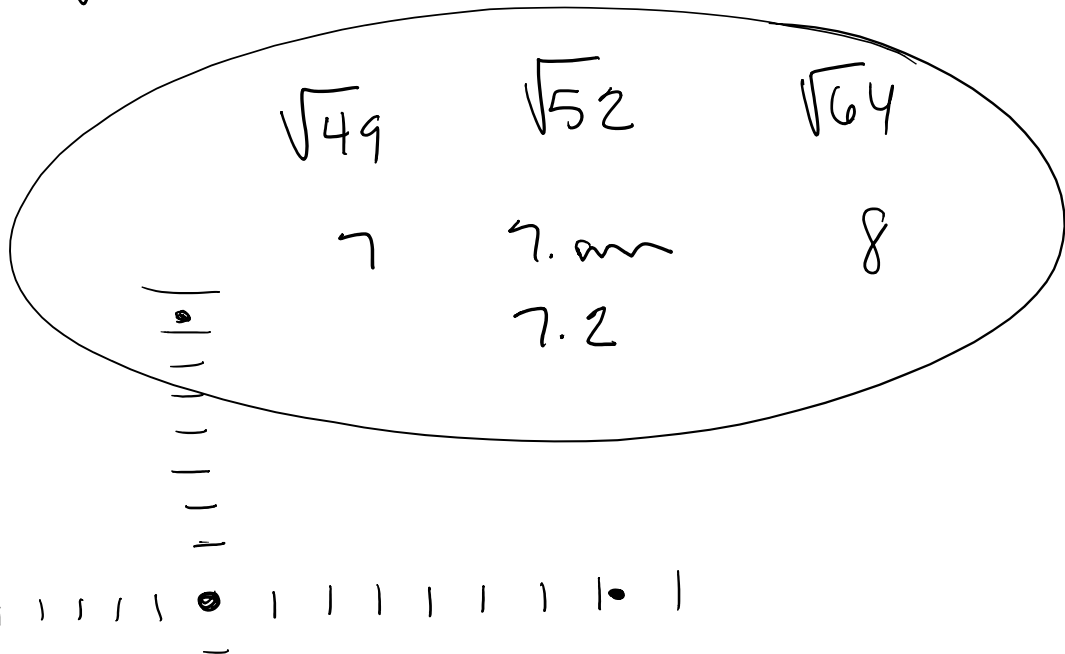
Bottom margin:

$$\text{radius} = \sqrt{r^2} = r$$

$$\sqrt{16} = 4$$

$$\sqrt{49} = 7$$

$$\sqrt{64} = 8$$

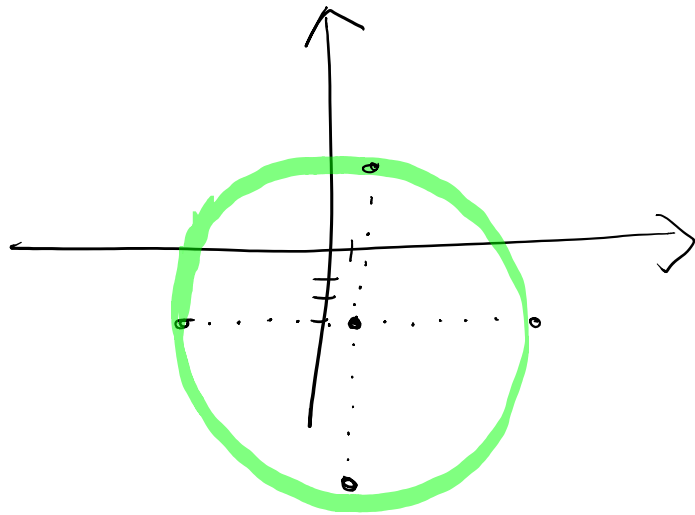




$$4. (x-1)^2 + (y+3)^2 = 36$$

$$(1, -3)$$

$$r: \sqrt{36} = 6$$



5.

• reorganize

• CTS x2

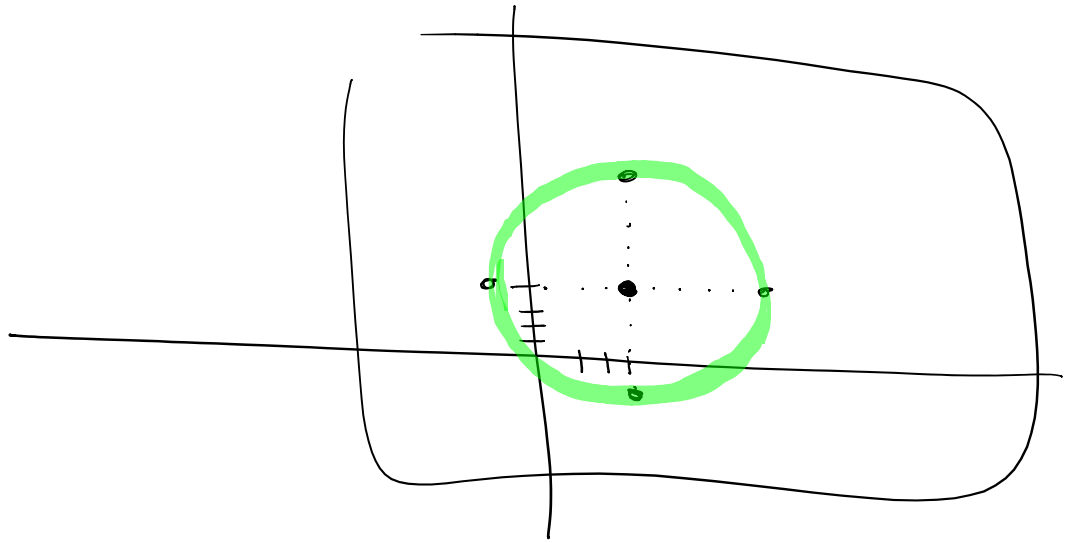
$$x^2 + y^2 - 6x - 8y = 0$$

$$x^2 - 6x + \underline{9} + y^2 - 8y + \underline{16} = 0$$

CTS

$$(x-3)^2 + (y-4)^2 = 25$$

$$(3, 4) \quad \text{radius} = \sqrt{25} = 5$$



6. 
$$\frac{3x^2 + 3y^2 + 30x - 24y - 18 = 0}{3}$$

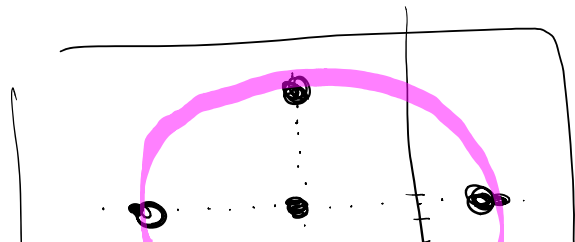
$$x^2 + y^2 + 10x - 8y - 6 = 0$$

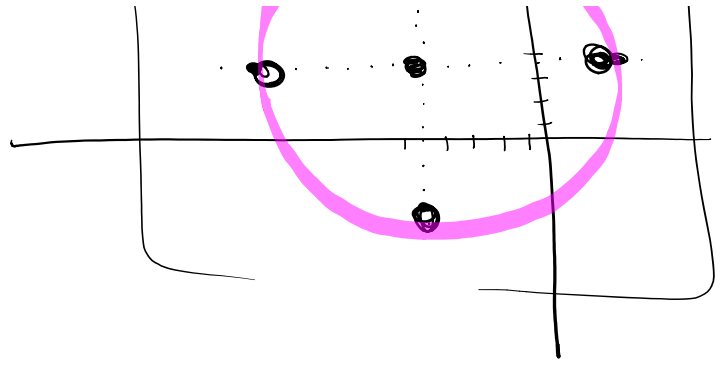
$$x^2 + 10x + \frac{25}{\downarrow} + y^2 - 8y + \frac{16}{\downarrow} = 6 + \frac{25}{\downarrow} + \frac{16}{\downarrow}$$

$$(x+5)^2 + (y-4)^2 = 47$$

Center  $(-5, 4)$

$$r = \sqrt{47} \approx 6.8$$





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

$(x-0)^2$   $(0,3)$

1.

$$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$$

$\longleftrightarrow a$   $\updownarrow b$

$$\frac{(x-3)^2}{16} + \frac{(y+1)^2}{25} = 1$$

Center  $(3, -1)$

$$a = \sqrt{16} = 4 \longleftrightarrow$$

$$b = \sqrt{25} = 5 \updownarrow$$

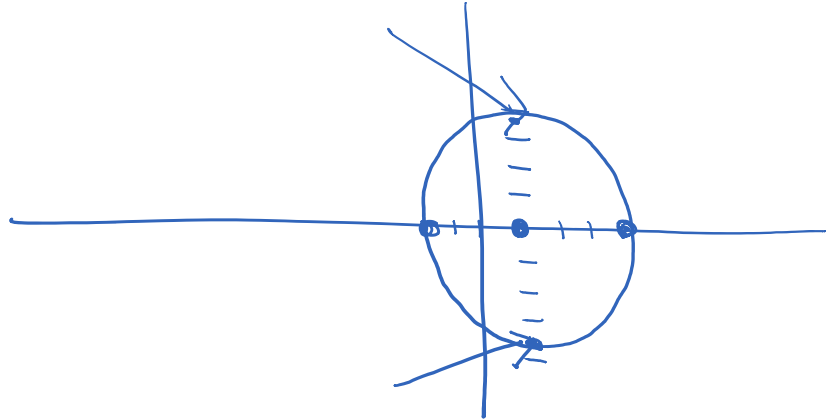
2.)

$$\frac{(x-1)^2}{9} + \frac{y^2}{12} = 1$$

Center  $(1, 0)$

$$\longleftrightarrow = \sqrt{9} = 3$$

$$\updownarrow = \sqrt{12} \approx 3.46$$



5.)

$$x^2 + 4y^2 - 10x + 16y + 37 = 0$$

$$x^2 - 10x + \frac{\quad}{+25} + 4y^2 + 16y + \frac{\quad}{+25} = -37 + 25$$

$\downarrow$   
 $(x-5)^2$

$\downarrow$   
 $4(y^2 + 4y + 4)$

+16

$$\frac{(x-5)^2}{4} + \frac{4(y+2)^2}{4} = \frac{4}{4}$$

$$\frac{(x-5)^2}{4} + \frac{(y+2)^2}{1} = 1$$

Center  $(5, -2)$

$$\left\langle \longrightarrow \right\rangle \sqrt{4} = 2$$

$$\sqrt{1} = 1$$