

# CIRCLE

STANDARD FORM

$$(X-h)^2 + (y-k)^2 = r^2$$

CENTER:  $(h, k)$

RADIUS:  $r$

1.  $r=4$   $(h, k) = (\underline{3}, \underline{-1})$

$$(X-h)^2 + (y-k)^2 = r^2$$

$$(X-3)^2 + (y-(-1))^2 = 4^2$$

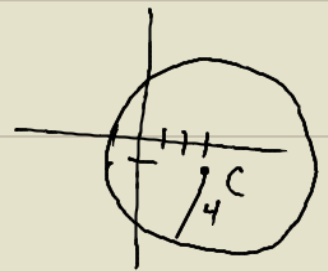
$$(X-3)^2 + (y+1)^2 = 16$$

$$(X-3)(X-3) + (y+1)(y+1) = 16$$

$$X^2 - 3X - 3X + 9 + y^2 + y + y + 1 - 16 = 0$$

$$X^2 - 6X + y^2 + 2y - 6 = 0$$

$$X^2 + y^2 - 6X + 2y - 6 = 0$$



2.  $4(X+3)^2 + 4(y-2)^2 = 8$

a)  $\frac{4(X+3)^2}{4} + \frac{4(y-2)^2}{4} = \frac{8}{4}$

$$(X+3)^2 + (y-2)^2 = 2$$

↓ opp sign      ↓ opp sign      ↓ TAKE SQRT OF IT

$h = -3$        $k = 2$        $r = \sqrt{2}$

CENTER:  $(h, k) = (-3, 2)$

RADIUS:  $r = \sqrt{2}$

b)



c)  $(X+3)^2 + (y-2)^2 = 2$

X-INT: PLUG 0 IN FOR y AND SOLVE

$$(X+3)^2 + (0-2)^2 = 2$$

$$(X+3)^2 + 4 = 2$$

$$(X+3)^2 = 2-4$$

$$(X+3)^2 = -2$$

$$X+3 = \pm\sqrt{-2}$$

$$X = -3 \pm i\sqrt{2}$$

NO X-INT.

y-INT: PLUG 0 IN FOR X AND SOLVE

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

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

$$(y-2)^2 = 2-9$$

$$(y-2)^2 = -7$$

$$y-2 = \pm\sqrt{-7}$$

$$y = 2 \pm i\sqrt{7}$$

NO y-INT