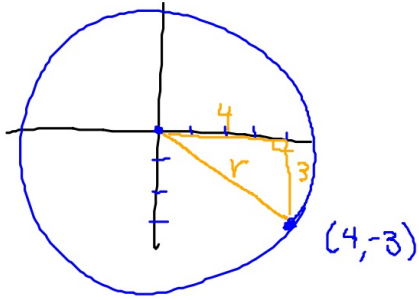


p. 655 # 33

⊖ passes through  $(4, -3)$   
center  $(0, 0)$



$$r = \sqrt{4^2 + (-3)^2}$$

$$= \sqrt{25}$$

$$r = 5$$

$$x^2 + y^2 = 25$$

Ex:  $x^2 + 4x + y^2 - 8y = 44$

this is a circle!

how do I know?

①  $x^2 + y^2$

② coeff's of  $x^2$  and  $y^2$   
are the same.

Q: how do we put in standard form?

A: factoring via completing the square!

$$\underbrace{x^2 + 4x + 4}_{(x+2)^2} + \underbrace{y^2 - 8y + 16}_{(y-4)^2} = 44 + 4 + 16$$

$x-h$                        $y-k$   
center  $(-2, 4)$      $r = 8$

final eq:  $(x+2)^2 + (y-4)^2 = 64$

$$\#48 \quad x^2 + 2x + 1 + y^2 = 4$$
$$\underbrace{(x+1)^2 + y^2 = 4}$$

$$r = 2$$

center  $(-1, 0)$

$$\#49 \quad x^2 + y^2 - 6x - 2y + 4 = 0$$

$$x^2 - 6x + 9 + y^2 - 2y + 1 = -4 + 9 + 1$$

$$(x-3)^2 + (y-1)^2 = 6$$

center:  $(3, 1)$   $r = \sqrt{6}$

hyperbola

