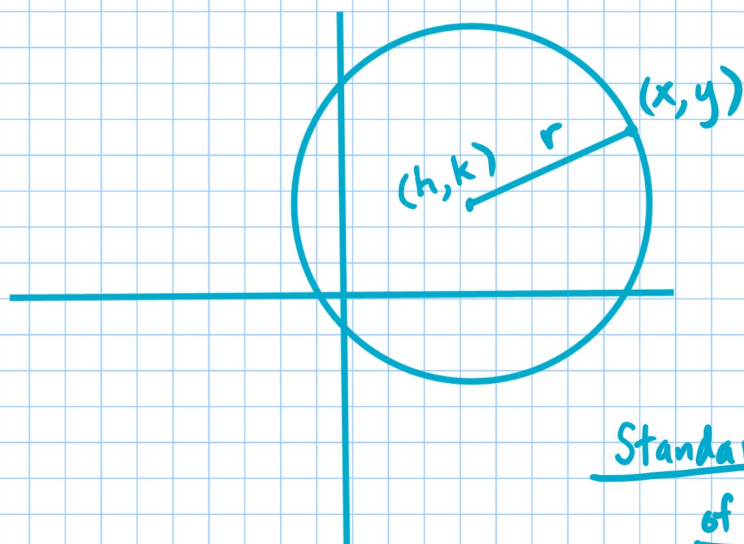


Circles

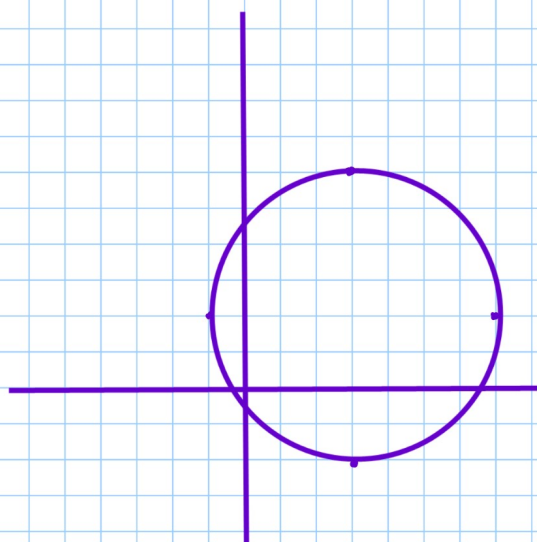


Standard Form of Equation of Circle

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

Write the standard form and graph the circle
With $(h, k) = (3, 2)$ and $r = 4$

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



General Form

$$x^2 + y^2 + ax + by + c = 0$$

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

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

$$x^2 - 6x + 9 + y^2 - 4y + 4 - 16 = 0$$

$$x^2 + y^2 - 6x - 4y - 3 = 0$$

ex: Find the center and radius of

$$x^2 + y^2 - 6x + 2y + 9 = 0$$

$$\underbrace{x^2 - 6x + 9}_{\left(\frac{b}{2}\right)^2} + \underbrace{y^2 + 2y + 1}_{\left(\frac{2}{2}\right)^2 = 1^2 = 1} = -9 + 9 + 1$$

$$\begin{array}{r} 9 \\ -3 \times -3 \\ \hline -6 \end{array}$$

$$\left(\frac{b}{2}\right)^2 \quad \left(\frac{2}{2}\right)^2 = 1^2 = 1$$

$$\left(\frac{-6}{2}\right)^2 = (-3)^2 = 9$$

$$(x-3)^2 + (y+1)^2 = 1 \quad \swarrow r^2$$

$$\text{center} = (3, -1), \quad r = 1$$

p31-32 39-49 odd, 53, 55, 57, 63, 65, 67