Sy mbolab

Solution

Circle center given $x^2 + y^2 + 10x - 6y + 18 = 0$: $(-5, 3)$

Steps

$$x^2 + y^2 + 10x - 6y + 18 = 0$$

Circle Equation

$(x-a)^2 + (y-b)^2 = r^2$ is the circle equation with a radius r, centered at (a, b)

Rewrite $x^2 + y^2 + 10x - 6y + 18 = 0$ in the form of the standard circle equation   *Hide Steps* ⊖

$$x^2 + y^2 + 10x - 6y + 18 = 0$$

Move the loose number to the right side

$$x^2 + 10x - 6y + y^2 = -18$$

Group x – variables and y – variables together

$$\left(x^2 + 10x\right) + \left(y^2 - 6y\right) = -18$$

Convert x to square form

$$\left(x^2 + 10x + 25\right) + \left(y^2 - 6y\right) = -18 + 25$$

Convert to square form

$$(x + 5)^2 + \left(y^2 - 6y\right) = -18 + 25$$

Convert y to square form

$$(x + 5)^2 + \left(y^2 - 6y + 9\right) = -18 + 25 + 9$$

Convert to square form

$$(x + 5)^2 + (y - 3)^2 = -18 + 25 + 9$$

Refine $-18 + 25 + 9$

$$(x + 5)^2 + (y - 3)^2 = 16$$

Rewrite in standard form

$$(x - (-5))^2 + (y - 3)^2 = 4^2$$

$$(x - (-5))^2 + (y - 3)^2 = 4^2$$

Therefore the circle properties are:

$$(a, b) = (-5, 3), r = 4$$

And the center is:

$$(-5, 3)$$

Graph

Plotting: $(x-(-5))^2 + (y-3)^2 = 4^2$