Equation of Circle

1. The graph of the equation below is a circle. Identify the center and radius of the circle.

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

2. Describe the graph of each equation. Explain how you know what the graph will look like.

a) $x^2 + 2x + y^2 = -1$

$b)$ $x^2 + y^2 = -3$

$c)$ $x^2 + y^2 + 6x + 6y = 7$

Equation of Circle

1. The graph of the equation below is a circle. Identify the center and radius of the circle.

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

$(x + 5)^2 + (y - 4)^2 = 49$

The center is $(-5, 4)$, and the radius is 7.

2. Describe the graph of each equation. Explain how you know what the graph will look like.

a) $x^2 + 2x + y^2 = -1$

$$(x + 1)^2 + y^2 = 0$$

The graph of this equation is a point. I can place a center at $(-1,0)$, but the radius is equal to zero. Therefore, the graph is just a single point.

$b)\ x^2 + y^2 = -3$

The right side of the equation is negative, so its graph cannot be a circle; it is an empty set.

$c)\ x^2 + y^2 + 6x + 6y = 7$

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

The graph of this equation is a circle with center $(-3, -3)$ and radius 5. Since the equation can be put in the form $(x - a)^2 + (y - b)^2 = r^2$, I know the graph of it is a circle.