Notes: Equations of Circles by “Completing the Square”

 **Complete the Square**

$ax^{2}+bx+c$ $ax^{2}-bx+c$

If *c* =orIf  *c* =

Then, Then,

**How to Complete the Square:**

**Example 1**

$$x^{2}+6x=1$$

$$x^{2}+6x +\\_\\_\\_\\_\\_\\_\\_=1+\\_\\_\\_\\_\\_\\_\\_$$

**Example 2**

$$x^{2}+12x=19$$

$$x^{2}+12x +\\_\\_\\_\\_\\_\\_\\_=19+\\_\\_\\_\\_\\_\\_\\_$$

**Example 3**

$$y^{2}-2y=3$$

$$y^{2}-2y +\\_\\_\\_\\_\\_\\_\\_=3+\\_\\_\\_\\_\\_\\_\\_$$

**Find the center and radius of this circle.**

1. $x^{2}-4x+y^{2}=13$

2. $x^{2}+y^{2}+8x-10y=13$

3. $x^{2}+16x+64+y^{2}-12y-36=13$