Circles

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

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

Ex. Rewrite the equation in Center form

$x^2 + y^2 + 6x - 4y - 3 = 0$	
$x^2 + 6x + y^2 - 4y = 3$	Rewrite
$x^2 + 6x + \_\_ + y^2 - 4y + \_\_ = 3$	Complete Sq notation
$3 \qquad -2$	
$x^2 + 6x + 9 + y^2 - 4y + 4 = 3 + 9 + 4$	½ and sq, & add both sides
$(x + 3)^2 + (y - 2)^2 = 16$	Factor
	Center (–3, 2), radius 4

Given the center and radius, write an equation of a circle in Center-radius form

1. (2, 6) and r = 5

2. (3, – 2) and r = 3

3. (– 9, – 3) and r = 4

4. (–5, 0) and r = 2

Rewrite the following equations in Center Radius form and graph.

5. $x^2 + y^2 - 6x = 0$

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

7. $x^2 + y^2 + 6x - 8y - 9 = 0$

8. $4x^2 + 4y^2 - 4x - 12y + 9 = 0$

9. Find an equation of a circle with a diameter having endpoints (–2, 5) and (10, – 1).

10. Graph $x^2 + y^2 - 6x + 10y - 2 < 0$