TOPIC 14-6: WRITING EQUATIONS OF CIRCLES

REVIEW:

1. Write the equation of a circle with a radius of 3 and is centered at (1, 2).

2. Multiply: $(x + 3)^2 =$

3. Factor the trinomial: $x^2 - 12x + 36$

***For $x^2 + bx + c$, c =_____**

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EXAMPLE 1: What term is needed to complete the square?

a) $a^2 + 8a +$ _____   b) $x^2 - 6x +$ _____

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EXAMPLE 2: Complete the Square.

HINTS:
1. Move the constant to the other side.
2. Divide everything by the coefficient of x^2.
3. Add the new number to BOTH sides.
4. Factor.

a) $x^2 + 6x + 8 = 0$

b) $4x^2 + 8x - 16 = 0$

A circle can be written in general form instead of standard form.

$Ax^2 + By^2 + Cx + Dy + E = 0$, where A=B

Standard form for a circle: $(x - h)^2 + (y - k)^2 = r^2$

EXAMPLE 3: Convert each equation into standard form by completing the square.

a) $x^2 + y^2 + 10x - 4y + 20 = 0$

b) $3x^2 + 3y^2 - 6x + 24y + 24 = 0$

c) $x^2 + y^2 + 14x + 45 = 0$ Graph the circle.