7-3 Solving Quadratic equations by completing the square Day 1

Remember:

$$(a^2 + 2ab + b^2) = (a+b)^2$$

determine the constant that must be added to the expression to make it a perfect square trinomial. Then factor the expression.

$$p^2 + 14p + 49 = (p+7)^2$$

You Try 
$$b = (2 - 3b)$$
  
 $w^2 + 12w + 3b = (w + b)^{2/2}$ 

$$w^2 + 9w + 6 = (w + 4)^2 \frac{8}{2} = 4^2 = 16$$

**Step 1:** group x terms together and move the constant to the other side of the equation (factor out the coefficient of x<sup>2</sup> if there is one)

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$$x^2 + 4x - 5 = 0$$
,  $x^2 + 4x - 5 = 0$ ,  $x^2 + 5 + 5 = 0$ . The state of  $x^2 + 5 + 5 = 0$ ,  $x^2 + 4x + 5$ 

Step 2: leave a blank behind the group of x's and  $\frac{4}{2} = 2^2 = 4$  on the other side of the equation

$$\left(x+\underline{2}\right)^2=5+\underline{4}$$

**Step 3:** to form a perfect square, create the () for the squared group

$$x + 4x + 4 = 5 + 4$$
Step 4: find  $\frac{b}{2}$   $(x + 2)^2 = 5 + 4$ 

Step 4: find  $\frac{b}{2}$   $\left(x + \underline{2}\right)^2 = 5 + \underline{2}$  and plug it in the () blank

Step 5: square the number from step 4 and place in in the blank with x's (if you have a coefficient multiply this number by the coefficient and fill in remaining blanks)

Step 6: simplify and solve 
$$(x+2)^2 = 5+4$$

$$\frac{(x+2)^2 = 9}{\sqrt{(x+2)^2}} = \sqrt{9}$$

$$x+2=\pm 3$$

$$x=-2\pm 3$$

$$x=1,-5$$

$$x^{2}-18x = -61$$

$$x^{2}-16x + 81 = -61 + 81$$

$$\sqrt{(x-9)^{2}} = 0$$

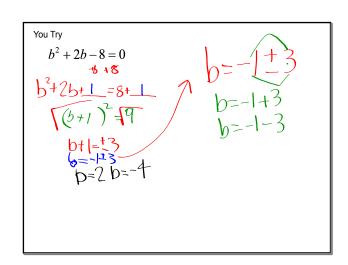
$$x-9 = +25$$

$$x-9 = +25$$

$$x=9 + 20$$

$$x=9 + 20$$

$$x=9 + 20$$



Solve by completing the square.

$$x^{2}-8x+9=0$$

$$-9$$

$$-9$$

$$-9+16$$

$$(x-3)^{2}=-16$$

$$x^{2}-8x+\frac{1}{2}=-9+16$$

$$x^{2}-8x+\frac{1}{2}=-16$$

$$x^{2}-8x+\frac{1}{2}=-16$$

$$x^{2}-16x+\frac{1}{2}=-16$$

$$x^{2}-16x+\frac{1}{2}=-16$$