5.5 Part 1 Completing the Square

Reminder: Factor each below.

1. $1x^2 + 14x + 49$

sum 14 | product 49

$1 \cdot 49$ $-1 \cdot -49$

$7 + 7$ | $7 \cdot 7$ $-7 \cdot -7$

$\frac{7}{1}$ $\frac{7}{1}$

$(1x+7)(1x+7)$

or

$(1x+7)^2$

2. $1x^2 - 8x + 16$

sum -8 | product 16

$1 \cdot 16$ $-1 \cdot -16$

$-4 + -4$ | $2 \cdot 8$ $-2 \cdot -8$

$4 \cdot 4$ $-4 \cdot -4$

$\frac{-4}{1}$ $\frac{-4}{1}$

$(1x-4)(1x-4)$

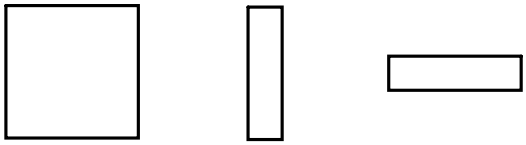
or

$(1x-4)^2$

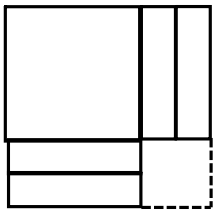
Find the value of c so you can factor as a perfect square trinomial.

3. $x^2 - 20x + c$

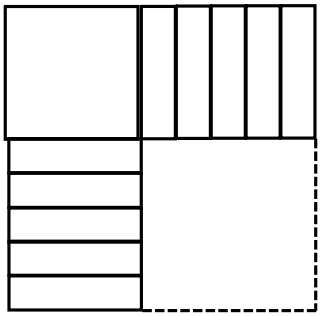
4. $x^2 + 16x + c$



$x^2 + 4x + \_\_\_\_$



$x^2 + 10x + \_\_\_\_$



COMPLETING THE SQUARE

STEP 1: Move the constant (no variable) to the other side.

STEP 2: Find $\frac{1}{2}$ of b. $ax^2 + bx + c$

STEP 3: Square the result of Step 2.

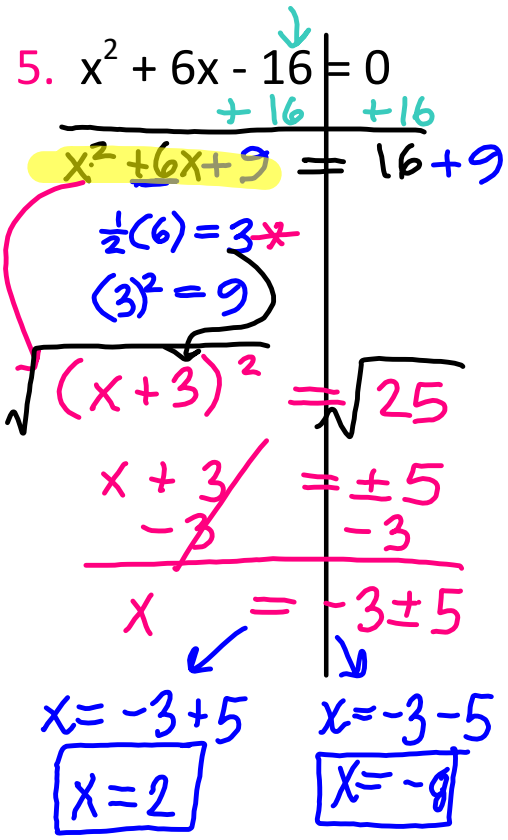
STEP 4: Add the result of Step 3.

STEP 5: Factor and solve by square roots.

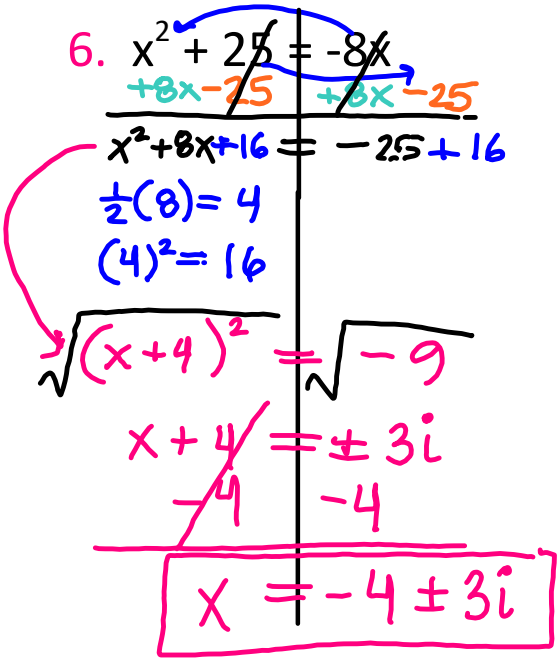
Important: The coefficient of x^2 must be 1!

Solve by completing the square.

5. $x^2 + 6x - 16 = 0$

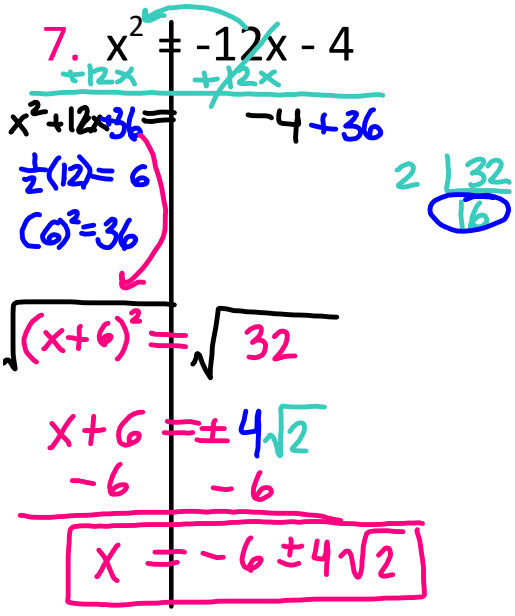


6. $x^2 + 25 = -8x$

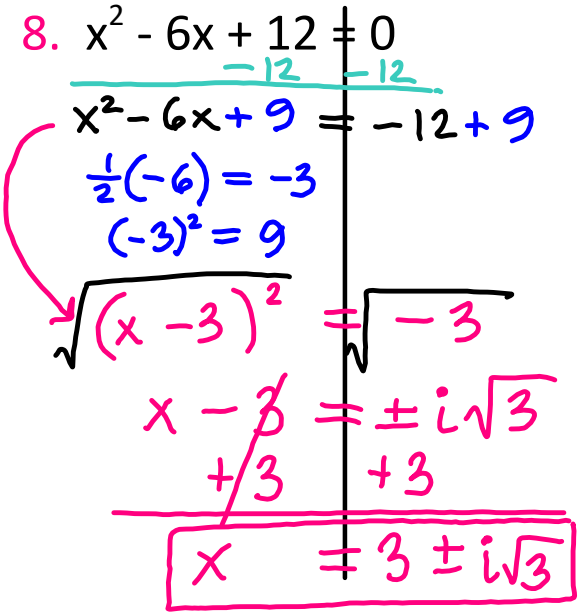


Solve by completing the square.

7. $x^2 = -12x - 4$



8. $x^2 - 6x + 12 = 0$



Solve by completing the square.

9. $x^2 = 1 - 10x$

10. $x^2 - 18x = -13$

Solve by completing the square.

11. $x^2 = -40x - 280$

12. $x^2 + 8x + 28 = 0$