

Sec1.5 Quadratics Solving by Factoring

Main points to recall-

-equation must equal zero before factoring

- written in descending order

$$\begin{array}{r} 10 \\ -5 \quad -2 \\ \hline -7 \end{array}$$

$$x^2 - 7x = 10$$

$$x^2 - 7x + 10 = 0$$

$$(x-5)(x-2) = 0$$

$$x-5=0 \quad x-2=0$$

$$x=5 \quad x=2$$

$$\{5, 2\}$$

$$4x^2 - 2x = 0$$

$$2x(2x - 1) = 0$$

$$\begin{array}{l} 2x = 0 \\ x = 0 \end{array} \quad \begin{array}{l} 2x - 1 = 0 \\ x = \frac{1}{2} \end{array}$$

$$\left\{ 0, \frac{1}{2} \right\}$$

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

$$2x^2 + 7x - 4 = 0$$

$$\begin{array}{r} \uparrow \\ x^2 + 7x - 8 \\ \begin{array}{r} 8 \times -1 \\ \hline 7 \end{array} \end{array}$$

$$\left(\frac{x+8}{2} \right) \left(\frac{x-1}{2} \right)$$

$$(x+4)(2x-1) = 0$$

$$\begin{array}{l} x+4=0 \\ x=-4 \end{array} \quad \begin{array}{l} 2x-1=0 \\ x=\frac{1}{2} \end{array}$$

$$\left\{ -4, \frac{1}{2} \right\}$$

$$3x^2 = 9x$$

$$3x^2 - 9x = 0$$

$$3x(x-3) = 0$$

$$3x = 0 \quad x-3 = 0$$

$$x = 0 \quad x = 3$$

$$\{0, 3\}$$

$$3x(2x+3) = 3x^2 + 30$$

$$6x^2 + 9x = 3x^2 + 30$$

$$3x^2 + 9x - 30 = 0$$

$$3(x^2 + 3x - 10) = 0$$

$$3(x+5)(x-2) = 0$$

$$x+5=0 \quad x-2=0$$

$$x = -5 \quad x = 2$$

Recap....expanding a binomial

use the shortcut, or FOIL/double distribute

$$(3x+2)^2$$

$$9x^2 + 12x + 4$$

*3x(2)
doubled*

$$(4x-1)^2$$

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

*4x(-1)
-4x*

$$9x^2 + 12x + 4$$

Suggested Practice

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1. $-2,5$

5. $-\frac{5}{2}, \frac{2}{3}$

10. $0,4$

2. $4,9$

6. $-\frac{2}{3}, -\frac{1}{3}$

11. $0, \frac{1}{3}$

3. $3,5$

7. $-\frac{4}{3}, 2$

12. $\frac{5}{4}$

4. $-10, -1$

8. $\frac{1}{4}, 3$

13. $-3, 1$

9. $-4, 0$

14. $\frac{1}{2}, 1$

