

① factor out the GCF.

$$2x^2y + 10xy$$

$$= 2xy(x+5)$$

$$\textcircled{2} 3s^3t^2 - 9st^2 + 18s^2t^3$$

$$= 3st^2(s^2 - 3 + 6st)$$

Mar 2-9:21 AM

$$\textcircled{3} 3wd + zw + 9zd + 3z$$

$$= w(3d + z) + 3z(3d + 1)$$

$$\textcircled{5} x^2 - 3x - 70$$

$$ax^2 + bx + c$$

$$x^2 + 7x - 10x - 70$$

$$x(x+7) - 10(x+7)$$

$$(x+7)(x-10)$$

$$a=1, b=-3, c=-70$$

-70	-3
1*-70	-69
2*-35	-33
7*-10	-35

Mar 2-9:29 AM

$$\textcircled{1} 9x^2 - 64$$

Difference of Square

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

$$a = \sqrt{9x^2} = \sqrt{3 \cdot 3 \cdot x \cdot x} = 3x$$

$$b = \sqrt{64} = \sqrt{8 \cdot 8} = 8$$

$$= (3x+8)(3x-8)$$

Mar 2-9:47 AM

$$\textcircled{8} 4x^2 - 28x + 49$$

$$a = 2x, b = 7$$

$$-2ab$$

$$-2(2x)(7)$$

$$= -28x$$

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

$$\rightarrow = (2x-7)^2$$

Mar 2-9:54 AM

Methods to Solve Quadratic Equations

- Always works!
- 1) Completing the Square
 - 2) Quadratic Formula
 - 3) Factoring
 - 4) Finding zeros (calc)
 - 5) Taking square roots of each side

Sep 18-8:35 PM

Method 1:

By Completing the Square

(Always works, but can be messy if we "half-it, square-it" and have fractions to work with.)

Sep 18-8:51 PM

Method 2:
By Quadratic formula (Always works)

Sep 18-8:51 PM

Method 3: Solve by Factoring

Works as long as the quadratic expression is **factorable**

zero product property:

If $ab = 0$, then $a = 0$ or $b = 0$

$$(3x+1)(x-4) = 0$$

$$3x+1=0$$

$$3x = -1$$

$$x = -1/3$$

$$x-4=0$$

$$x = 4$$

$$x = 4$$

$$x = 4$$

$$x = 4$$

$$x = 4$$

$$x = 4$$

$$x = 4$$

$$x = 4$$

$$x = 4$$

$$x = 4$$

Sep 26-3:32 PM

Solve by Factoring: Move to one side first!

$$1) 6x^2 = 12x$$

$$-12x -12x$$

$$6x^2 - 12x = 0$$

$$6x(x-2) = 0$$

$$6x = 0 \quad x-2 = 0$$

$$x = 0 \quad x = 2$$

$$2) 6n^2 - 11n = 2$$

$$6n^2 - 11n - 2 = 0$$

$$6n^2 + n - 12n - 2 = 0$$

$$n(6n+1) - 2(6n+1) = 0$$

$$(6n+1)(n-2) = 0$$

$$6n+1 = 0 \quad n-2 = 0$$

$$n = -1/6 \quad n = 2$$

$$\begin{array}{r|l} p = -12 & s = -11 \\ \hline 1, -12 & -11 \end{array}$$

Mar 11-8:03 AM

$$3) 4x^2 = 4x + 15$$

$$-4x - 15 -4x -15$$

$$4x^2 - 4x - 15 = 0$$

$$4x^2 + 6x - 10x - 15 = 0$$

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

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

$$2x+3 = 0 \quad 2x-5 = 0$$

$$2x = -3 \quad 2x = 5$$

$$x = -3/2 \quad x = 5/2$$

$$5) 4x^2 - 25 = 0 \quad x = \frac{5}{2} = 2\frac{1}{2}$$

$$\begin{array}{r|l} p = -60 & s = -4 \\ \hline 1, -60 & \\ 2, -30 & \\ 3, -20 & \\ 4, -15 & \\ 5, -12 & \\ 6, -10 & -4 \end{array}$$

Feb 10-3:29 PM

$$4) x^2 - 12x + 35 = 0$$

When $a=1$,

sum + prod has

a short-cut.

$$(x-5)(x-7) = 0$$

$$x = 5 \quad x = 7$$

$$\begin{array}{r|l} p = 35 & s = -12 \\ \hline -1, -35 & \\ -5, -7 & -12 \end{array}$$

Sep 27-8:25 AM

$$5) 7m^2 - 14m = 0$$

$$7m(m-2) = 0$$

$$7m = 0 \quad m-2 = 0$$

$$m = 0 \quad m = 2$$

$$2) 6) x^2 - 4x - 12 = 0$$

$$(x+2)(x-6) = 0$$

$$x+2 = 0 \quad x-6 = 0$$

$$x = -2 \quad x = 6$$

$$\begin{array}{r|l} a = 1, \text{ short cut!} & \\ p = -12 & s = -4 \\ \hline 1, -12 & \\ 2, -6 & -4 \end{array}$$

Oct 2-8:53 AM

7) $4x^2 = 121$
 $4x^2 - 121 = 0$
 $(2x+11)(2x-11) = 0$

$(2x+11)(2x-11) = 0$
 $2x+11=0$ $2x-11=0$
 -11 -11 $+11$ $+11$
 $\frac{2x}{2} = \frac{-11}{2}$ $\frac{2x}{2} = \frac{11}{2}$
 $x = -\frac{11}{2}$ $x = \frac{11}{2}$

8) $2x^2 - x - 7 = 0$
 $a=2$ $b=-1$ $c=-7$
 $x = \frac{-(-1) \pm \sqrt{(-1)^2 - 4(2)(-7)}}{2(2)}$
 $x = \frac{1 \pm \sqrt{57}}{4}$
 $x = \frac{1+\sqrt{57}}{4}$ $x = \frac{1-\sqrt{57}}{4}$

No shortcut!
 $+ \oplus$
 $p = -14$ $s = -1$

1, -14	-13
2, -7	-5

 $\times$ prime

Sep 26-3:33 PM