

## Unit 8 Day 11 Notes on Quadratic Formula

Think about factoring and solving  $x^2 + 4x - 7 = 0$  ...

# KEY

### QUADRATIC FORMULA

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

← Find this first!

A method to find the Solutions of a quadratic equation that is in the form  $ax^2 + bx + c = 0$ .



#### Quadratic Formula Song (Sing the tune to Pop goes the Weasel)

x equals opposite b  
plus or minus the square root  
of b squared minus 4ac  
all over 2a.

Now let's use it to help us solve  $x^2 + 4x - 7 = 0$ .  
 $a=1, b=4, c=-7$   
 $b^2 - 4ac = (4)^2 - 4(1)(-7) = 44$

$$x = \frac{-4 \pm \sqrt{44}}{2(1)} \rightarrow \frac{-4 + \sqrt{44}}{2} = 1.317$$

$$\rightarrow \frac{-4 - \sqrt{44}}{2} = -5.317$$

A few to try together ...

1.  $x^2 + 5x - 5 = 0$   $a=1, b=5, c=-5$

$$b^2 - 4ac = (5)^2 - 4(1)(-5) = 45$$

$$x = \frac{-5 \pm \sqrt{45}}{2(1)} \rightarrow \frac{-5 + \sqrt{45}}{2} = 0.854$$

$$\rightarrow \frac{-5 - \sqrt{45}}{2} = -5.854$$

\*  $-3x^2 + 5x + 2 = 0$

2.  $-3x^2 + 5x = -2$   $a=-3, b=5, c=2$

$$b^2 - 4ac = (5)^2 - 4(-3)(2) = 49$$

$$x = \frac{-5 \pm \sqrt{49}}{2(-3)} \rightarrow \frac{-5 + 7}{-6} = \frac{2}{-6} = -\frac{1}{3}$$

$$\rightarrow \frac{-5 - 7}{-6} = \frac{-12}{-6} = 2$$

A few to try on your own ...

3.  $2x^2 - 2x - 3 = 0$   $a=2, b=-2, c=-3$

$$b^2 - 4ac = (-2)^2 - 4(2)(-3) = 28$$

$$x = \frac{2 \pm \sqrt{28}}{2(2)} \rightarrow \frac{2 + \sqrt{28}}{4} = 1.823$$

$$\rightarrow \frac{2 - \sqrt{28}}{4} = -0.823$$

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

$x^2 + 8 = 6x$   $a=1, b=-6, c=8$

$$b^2 - 4ac = (-6)^2 - 4(1)(8) = 4$$

$$x = \frac{6 \pm \sqrt{4}}{2(1)} \rightarrow \frac{6 + 2}{2} = 4$$

$$\rightarrow \frac{6 - 2}{2} = 2$$