

# Day (1)

## 9.6 The Quadratic Formula & the Discriminant

\* Reminder a quadratic equation can have 1, 2 or no real # solutions. (A quadratic equation cannot have more than 2 solutions.)

### \* Quadratic Formula

- best used when the other methods cannot be used

- will work for any quadratic equation

If  $ax^2 + bx + c = 0$  and  $a \neq 0$ , then

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

\* Review Problem 1 on pg. 583

\* (got it #1)  $x^2 - 4x = 21$   
 $x^2 - 4x - 21 = 0$

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

$$x = \frac{4 \pm \sqrt{(-4)^2 - 4(1)(-21)}}{2(1)}$$

$$x = \frac{4 \pm \sqrt{16 + 84}}{2}$$

$$x = \frac{4 \pm \sqrt{100}}{2}$$

$$x = \frac{4+10}{2} \quad x = \frac{4-10}{2}$$

$$x = 7 \quad x = -3$$

\* Review Problem 2 on pg. 584

\* Remember: Sometimes the negative answer does not make sense in the given situation. Make sure your answer is always reasonable.

\* Got it #2)

$$y = -0.005x^2 + 0.7x + 3.5$$

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

$$x = \frac{-0.7 \pm \sqrt{(0.7)^2 - 4(-0.005)(3.5)}}{2(-0.005)}$$

$$x = \frac{-0.7 \pm \sqrt{0.56}}{-0.01}$$

$$x = \frac{-0.7 \pm 0.75}{-0.01}$$

$$x = -5 \text{ \& \#145}$$

\* negative does not make sense

145 feet

# Review of Chapter 9

There are many methods for solving a quadratic equation.

## Method

① Graphing (9.1 & 9.2)

② Square roots (9.3)

③ Factoring (9.4)

④ Completing the square (9.5)

⑤ Quadratic formula (9.6)

## When to Use

Use if you have a graphing calculator handy.

Use if the equation has no  $x$ -term.

Use if you can factor the equation easily.

Use if the coefficient of  $x^2$  is 1, but you cannot easily factor the equation.

Use if the equation cannot be factored easily or at all.

*(will work for any quadratic equation)*

*OR the vertex is reasonable to graph*

