

A ball is shot into the air. The following equation models the height of the ball as a function of time:

$$h(t) = -16t^2 + 240t + 50$$

1. What does the 50 represent?

initial height

2. Find the time it takes to reach this maximum height.

$$\frac{-240}{-32} = 7.5 \text{ sec}$$

3. Find the maximum height of the ball.

$$h(7.5) = 950 \text{ ft}$$

vertex  
(t, h)

$$h(t) = -16t^2 + 240t + 50$$

How long does it take this ball to come back down to the ground?

$$0 = -16t^2 + 240t + 50$$

$$b^2 - 4ac = 60,800$$

$$\frac{-240 \pm \sqrt{60,800}}{-32}$$

$$t = -21, 15.21$$

$$t = 15.21 \text{ sec}$$

the only answer that makes sense is the positive answer. Plus, it will only hit the ground once.

$$h(t) = -16t^2 + 240t + 50$$

How long will it take to reach a height of 300 feet?

$$300 = -16t^2 + 240t + 50$$

$$0 = -16t^2 + 240t - 250$$

$$b^2 - 4ac = 41,600$$

$$\frac{-240 \pm \sqrt{41,600}}{-32}$$

$$t = 1.13, 13.87$$

Both answers make sense because it will reach a height of 300 ft twice, once on the way up to the max and then again on the way down to the ground.

An object is shot into the air. The following equation models the height of the ball as a function of time:

$$h(t) = -16t^2 + 80t + 13$$

How long will it take this object to reach a height of 150 feet?

$$150 = -16t^2 + 80t + 13$$

$$-150$$

$$0 = -16t^2 + 80t - 137$$

$$b^2 - 4ac = -2368$$

Object  
Never  
Reaches  
this  
height

there is no real solution to this equation which means

You can now finish Hwk #30      Sec 10-7

Pages 550 - 551

Problems 3, 6, 12-14, 19, 20, 24, 25

If I gave you a bunch of Quadratic Equations to solve and told you that you must use each of the following methods at least once:

- Factoring
- Quadratic Formula
- Square Roots

Which method would you try to use first?

Use Square Roots first.....look for the Quadratics that have **no b**

Which method would you try to use next?

Try factoring next....look for the ones that appear easy to factor    **a=1**

Which method would you save for last?

Use Quadratic Formula last.....**it will always work**