

Algebra 1 Bellwork Friday, May 8, 2015

Round decimal answers to the nearest hundredth.

1. A ball is shot into the air with an initial velocity of 216 ft/sec from an initial height of 21 feet.

$$h(t) = -16t^2 + 216t + 21$$

a) Find the time it takes the object to come back down to the ground.

b) Find the time it takes the object to reach a height of 400 feet.

c) Find the time it takes the object to reach a height of 750 feet.

2. An object is shot into the air with an initial velocity of 180 ft/sec from an initial height of 75 feet.

$$h(t) = -16t^2 + 180t + 75$$

a) Find the time it takes the object to reach a height of 50 feet.

b) Find the time it takes the object to reach a height of 600 feet.

Round decimal answers to the nearest hundredth.

ANSWERS

1. A ball is shot into the air with an initial velocity of 216 ft/sec from an initial height of 21 feet.

$$h(t) = -16t^2 + 216t + 21$$

- a) Find the time it takes the object to come back down to the ground.

→ height = 0

$$0 = -16t^2 + 216t + 21$$

$$b^2 - 4ac = 48000$$

$$t = \frac{-216 \pm \sqrt{48000}}{-32} = -0.16 \text{ \& } 13.60$$

$$t = 13.60 \text{ sec}$$

- b) Find the time it takes the object to reach a height of 400 feet.

$$\begin{array}{r} 400 = -16t^2 + 216t + 21 \\ -400 \qquad \qquad -400 \end{array}$$

$$0 = -16t^2 + 216t - 379$$

$$b^2 - 4ac = 22,400$$

$$t = \frac{-216 \pm \sqrt{22,400}}{-32} = 2.07 \text{ \& } 11.43$$

$$t = 2.07 \text{ sec \& } 11.43 \text{ sec}$$

- c) Find the time it takes the object to reach a height of 750 feet.

$$\begin{array}{r} 750 = -16t^2 + 216t + 21 \\ -750 \qquad \qquad -750 \end{array}$$

$$0 = -16t^2 + 216t - 729$$

$$b^2 - 4ac = 0$$

$$t = \frac{-216 \pm \sqrt{0}}{-32}$$

$$t = 6.75 \text{ sec}$$

750 is max height!

2. An object is shot into the air with an initial velocity of 180 ft/sec from an initial height of 75 feet.

$$h(t) = -16t^2 + 180t + 75$$

- a) Find the time it takes the object to reach a height of 50 feet.

$$\begin{array}{r} 50 = -16t^2 + 180t + 75 \\ -50 \qquad \qquad -50 \end{array}$$

$$0 = -16t^2 + 180t + 25$$

$$b^2 - 4ac = 34,000$$

$$t = \frac{-180 \pm \sqrt{34,000}}{-32} = -0.14 \text{ \& } 11.39$$

$$t = 11.39 \text{ sec}$$

- b) Find the time it takes the object to reach a height of 600 feet.

$$\begin{array}{r} 600 = -16t^2 + 180t + 75 \\ -600 \qquad \qquad -600 \end{array}$$

$$0 = -16t^2 + 180t - 525$$

$$b^2 - 4ac = -1200$$

THE OBJECT NEVER REACHES THIS HEIGHT, IT IS BEYOND THE MAX HT.