CLASS NOTES

8.11 Maximum/Minimum Problems Day 2

$$h(t)=-16t^2 + vt + h$$

- *h(t)* represents the projectile's height at any time *t*
- *v* represents initial velocity
- h represents the initial height from which the projectile is released
- *t* represents time in seconds after the projectile is released

Example 1: Two kids are playing catch in the yard. A ball is thrown directly upward from an initial height of 4 feet with an initial velocity of 44 feet per second.

a. What is an equation to represent this situation?

b. How long will it take the ball to reach one of the kid's hands if it is caught at a height of 5 feet?

c. How long would it have taken to hit the ground?

d. What is the maximum height the ball reaches?

CLASS NOTES

Example 2: Katie is hitting tennis balls. When she tosses the ball into the air, her hand is 4 feet above the ground. She hits the ball when it falls back to a height of 3 feet. The height of the ball is given by $h(t) = 4 + 15t - 16t^2$, where t is time in seconds.

a. How much time will pass before Katie hits the ball? (Round to the nearest tenth)