**Secondary Math 2 8.4 Homework Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_**

**Applications of Quadratic Equations**

1. A hammock that hangs between two trees makes a parabola that has the equation

$y = 0.4\left(x-3\right)^{2}+1.2$, where x and y are measured in meters.

* 1. If the x-axis is the ground and the y-axis is a tree, how high up is the hammock attached to the trees?
	2. How far apart are the trees?
	3. How high up off the ground is the lowest part of the hammock?
1. After the semester is over, you discover that the math department has changed textbooks so the library doesn’t want your book back. You decide to get creative. You go to the roof of a twelve-story building and look over the edge to the reflecting pool 160 feet below. You drop your book over the edge and notice that the book follows a curve that you model as $s\left(t\right)=–16t^{2}+ 160$How long does it take your book to hit the water?
2. A soccer ball is kicked from the ground, and its height in meters above ground is modeled by the function $h (t) = -4.9t^{2} + 19.6t$, where t represents the time in seconds after the ball is kicked. How long is the ball in the air?
3. A golf ball is hit from the ground, and its height above the ground is modeled by the function $h \left(t\right)= -16t^{2} + 144t$, where t is the time in seconds after the ball is hit.

a. When does the ball reach its highest point?

b. What is the highest point?

c. In this situation, is it possible for the golf ball to clear a tree that is 24 feet tall?

**Review Problems:**

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|  | Given the equation: $y=x^{2}-4x-3$ |  |
|  | Graph the following quadratic equation in vertex form: $y=-3x^{2}+5$ |  |
|  | Graph the following quadratic equation in intercept form: $y=\frac{1}{2} x (x-5)$ |  |