Extension: Quadratic Word Problems Part 1 Algebra 2 Kitt

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period:\_\_\_\_\_\_

**Directions**: *Respond to each of the following word problems.*

1) A ball is thrown straight up with an initial velocity of $h\left(t\right)=56-16t^{2}$,

 A. What is the maximum height?

 B. What is the height of the ball after 1 second?

2) A ball is thrown upward from the ground. Its height (*h*, in feet) is given by the function $h\left(t\right)=-16t^{2}+64t+3$, where ***t*** is the length of time (in seconds) that the ball has been in the air. What is the maximum height that the ball reaches?

3) The height, $h(t)$, in feet, of an object shot from a connon with initial velocity of 20 feet per second can be modeled by the equation $h\left(t\right)=-16t^{2}+20t+6$, where ***t*** is the time, in seconds, after the cannon is fired. What is the maximum altitude that the object reaches?

4) The engine torque ***y*** (in foot-pounds) of one model of car is given by $y=-3.75t^{2}+23.2t+38.8$ where ***x*** is the speed of the engine (in thousands of revolutions per minute).

 A. Find the engine speed that maximizes the torque.

 B. What is the maximum torque?

5. When a kangaroo jumps, its path through the air can be modeled by $y=-.0267x^{2}+.8x$ where ***x*** is the kangaroo’s horizontal distance traveled (in feet) and ***y*** is its corresponding height (in feet).

 A. How high can a gray kangaroo jump?

 B. How far can it jump?

**Directions**: *Solve each polynomial by factoring.*

