**Using Quadratic Functions to Understand Projectile Motion**

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

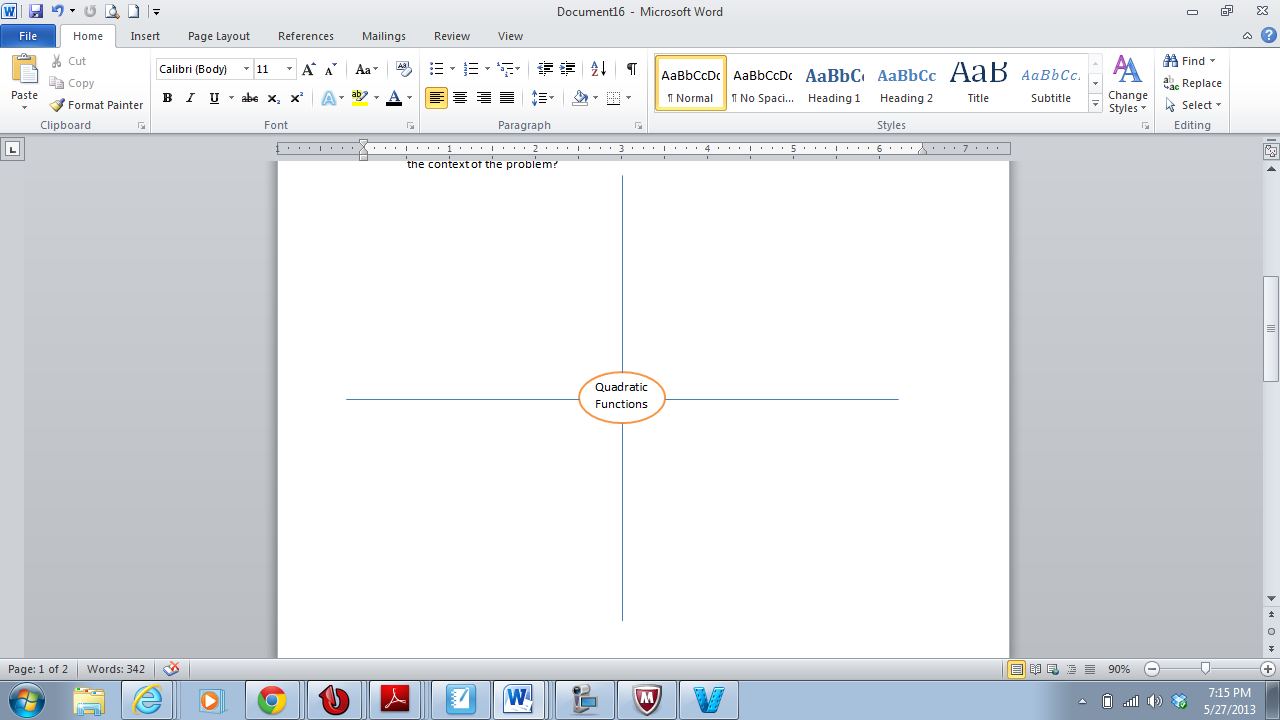
A rocket is launched from 180 feet above the ground at time t = 0. The function that models this situation is given by *h(t)* = – 16*t*2 + 96t + 180, where *t* is measured in seconds and *h* is height above the ground measured in feet.

1. What is the practical domain for *t* in this context? Why?
2. What is the height of the rocket two seconds after it was launched?
3. What is the maximum value of the function and what does it mean in context?
4. When is the rocket 100 feet above the ground?
5. When is the rocket 250 feet above the ground?
6. Why are there two answers to part e but only one practical answer for part d?
7. What are the intercepts of this function? What do they mean in the context of this problem?
8. What are the intervals of increase and decrease on the practical domain? What do they mean in the context of the problem?

Quadratic Functions

Independent Practice

A basketball player shoots a basketball 6 feet above the ground at time t=0. The function that models this situation is given by *h(t*)=-16t2+38t+6, where *t* is measured in seconds and *h* is height above the ground measured in feet.

1. What is the practical domain for *t* in this context?
2. What is the height of the ball one second after the basketball player shoots it in the air?
3. What is the maximum value of the function and what does it mean in context?
4. When is the ball 10 feet above the ground?
5. When is the ball 4 feet above the ground?
6. Why are there two answers for part d but only one practical answer for part e?
7. What are the intercepts of this function? What do they mean in the context of this problem?
8. What are the intervals of increase and decrease on the practical domain? What do they mean in the context of the problem?