

## Math103 Extra Problems

Covered in Thursdays Class

1. An earthquake measured 63,100,000 times greater than the threshold intensity  $I_0$  which is the weakest earthquake measurable on a seismograph. The magnitude on the Richter scale is defined by the function:

$$R(I) = \log\left(\frac{I}{I_0}\right)$$

2. An F-18 drops a bomb from an altitude of 8,000 feet above sea level on a target located at an elevation of 2,000 feet above sea level. The bomb altitude in feet after release is described by the following function  $A(t)$  as a function of  $t$  in seconds.

$$A(t) = -16t^2 + 8,000$$

What is the altitude of the bomb 10 seconds after release? \_\_\_\_\_

How many seconds will it take the bomb to reach its target? \_\_\_\_\_

3. A coastal defense canon fires a shell with an initial vertical velocity of 800 feet/second and an initial altitude of 200 feet above the water. The altitude of the shell can be approximated using the following function where  $A(t)$  is represents the altitude of the shell in feet at  $t$  seconds after launch:

$$A(t) = -16t^2 + 800t + 200 \quad \text{feet} \quad (\text{show units in answer})$$

What is the altitude of the shell 30 seconds after launch? \_\_\_\_\_

What time does the shell reach its maximum altitude? \_\_\_\_\_

What is the maximum altitude of the shell? \_\_\_\_\_

At what time does the shell splash down in the water? \_\_\_\_\_