

Quiz 1Name: SOLUTIONS

Math 103 - Introduction to Calculus

July 8, 2008

Note: *In order to receive full credit, you must show work that justifies your answer.*

A rocket is launched from the ground at time $t = 0$. The chart below shows its height above the ground at different times.

t (seconds)	0	2	4
h (feet)	0	108	240

(a) Calculate the average velocity of the rocket between $t = 0$ and $t = 2$ seconds.

$$\text{average velocity} = \frac{\text{change in position}}{\text{change in time}} = \frac{108 - 0}{2 - 0} = 54$$

(b) Calculate the average velocity of the rocket between $t = 2$ and $t = 4$ seconds.

$$\text{average velocity} = \frac{\text{change in position}}{\text{change in time}} = \frac{240 - 108}{4 - 2} = 66$$

(c) Estimate the instantaneous velocity at $t = 2$ seconds by averaging your answers for parts (a) and (b).

$$\text{instantaneous velocity} \approx \frac{54 + 66}{2} = 60$$

(d) What are the units for the velocities you calculated above?

feet per second