

NAME: _____

Quiz # 2

20 points total. You have 20 minutes.

1. This table gives the height above sea level for a rocket launched at time $t = 0$.

t (seconds)	0	1	2	3	4
h (meters)	0.00	9.02	24.60	52.13	99.55

- (a) (2 pts) Compute the average velocity for the interval $[0, 2]$. *You can do this by hand. Easily.*

- (b) (2 pts) Compute the average velocity for the interval $[0, 1]$. *Ditto.*

- (c) (2 pts) Is the average velocity computed in part (b) a good or useful estimate of the instantaneous velocity at time $t = 0$? Explain in at most two sentences, but make those sentences complete.

2. (5 pts) Write out a definition (*one precise sentence*) of

$$\text{“ } \lim_{x \rightarrow a} f(x) = L \text{ ”}$$

3. (5 pts) On the axes provided, sketch the graph $y = f(x)$ of an example of a function $f(x)$ that satisfies all the given conditions, *making clear what happens near $x = 1$* :

$$\lim_{x \rightarrow 1^-} f(x) = 2, \quad \lim_{x \rightarrow 1^+} f(x) = -2, \quad f(1) = 2.$$

4. (4 pts) Determine the infinite limit:

$$\lim_{x \rightarrow 0^+} \frac{\cos x}{\sin x}$$