

MA 113 CALCULUS I, SPRING 2020
WRITTEN ASSIGNMENT #2

Instructions: The purpose of this assignment is to develop your ability to formulate and communicate mathematical arguments. Your complete assignment should have your name and section number on each page, be stapled, and be neat and legible. *Unreadable work will receive no credit.*

You should provide well-written, complete answers to each of the questions. We will look for correct mathematical arguments, complete explanations, and correct use of English. Your solution should be formulated in complete sentences. As appropriate, you may want to include diagrams or equations written out on a separate line. You may read your textbook to find examples of how we communicate mathematics.

Students are encouraged to use word-processing software to produce high quality solutions. However, you may find that it is simpler to add graphs and equations using pen or pencil.

1. The position of an object after t seconds is $s(t) = t^3 + t$ meters.
 - (a) (2 points) What is the average velocity of the object between 3 seconds and 5 seconds? Include units!
 - (b) (2 points) As a function of x , what is the average velocity of the object between x seconds and $x + 1$ seconds? Include units!
2. (4 points) Sketch the graph of an example of a function f that satisfies all of the following conditions:

$$\begin{array}{lll} \text{Range} = [-2, 5] & & \\ \lim_{x \rightarrow 0^-} f(x) = 2, & \lim_{x \rightarrow 0^+} f(x) = 0, & \lim_{x \rightarrow 4^-} f(x) = 3, \\ \lim_{x \rightarrow 4^+} f(x) = 0, & f(0) = 2, & f(4) = 1 \end{array}$$