

Math 10860, Honors Calculus 2

Quiz 1, Thursday January 23

Name:

1. Let $f : [a, b] \rightarrow \mathbb{R}$, with $a < b$.
 - (a) What (single) additional hypothesis do we need to put on f , in order to be able to define upper and lower Darboux sums for all partitions of $[a, b]$?¹

 - (b) Let $P = t_0, t_1, \dots, t_n$ be a partition of $[a, b]$, with $a = t_0 < t_1 < t_2 < \dots < t_n = b$. What is the *lower Darboux sum* $L(f, P)$? Define any new symbols you use in your answer.

2. (a) Suppose that f is integrable on $[a, b]$, for some $a < b$, and suppose that c and d are such that $a < c < d < b$. Show that f is integrable on $[c, d]$. (In this question you may use, without proof, any of the basic properties of integration that we established in class, as long as you state the properties clearly and correctly. If space is tight, you can use the back to give the property statements.)

- (b) The full-blown definition of the expression $\int_a^b f$ was given for $a < b$. What is the correct way to interpret $\int_a^b f$ when $a > b$?

¹Note that by writing " $f : [a, b] \rightarrow \mathbb{R}$ ", I'm already hypothesizing that f is defined at all points between a and b .