

Math 151 Quiz 1 1/17/12 Name _____

Directions: Get every problem right. Don't cheat, and for god's sake don't choke.

1) Dr. S is cruising along in his cool math guy mobile, and his custom-designed geeky odometer informs him that his position is given by the function $s = 2.9t^2 + 3t$, where s is in blocks, and t is in minutes.

a) Find his average velocity on at least four different time intervals of your choosing, **keeping in mind that your eventual goal will be to get a good estimate of the instantaneous velocity at 3 minutes.** You will be graded partly on your choice of intervals.

(8 Pts.)

b) Use your answer from part (a) to give the best estimate you can of Dr. S's instantaneous velocity at exactly 3 minutes into his super-cool trip.

(5)

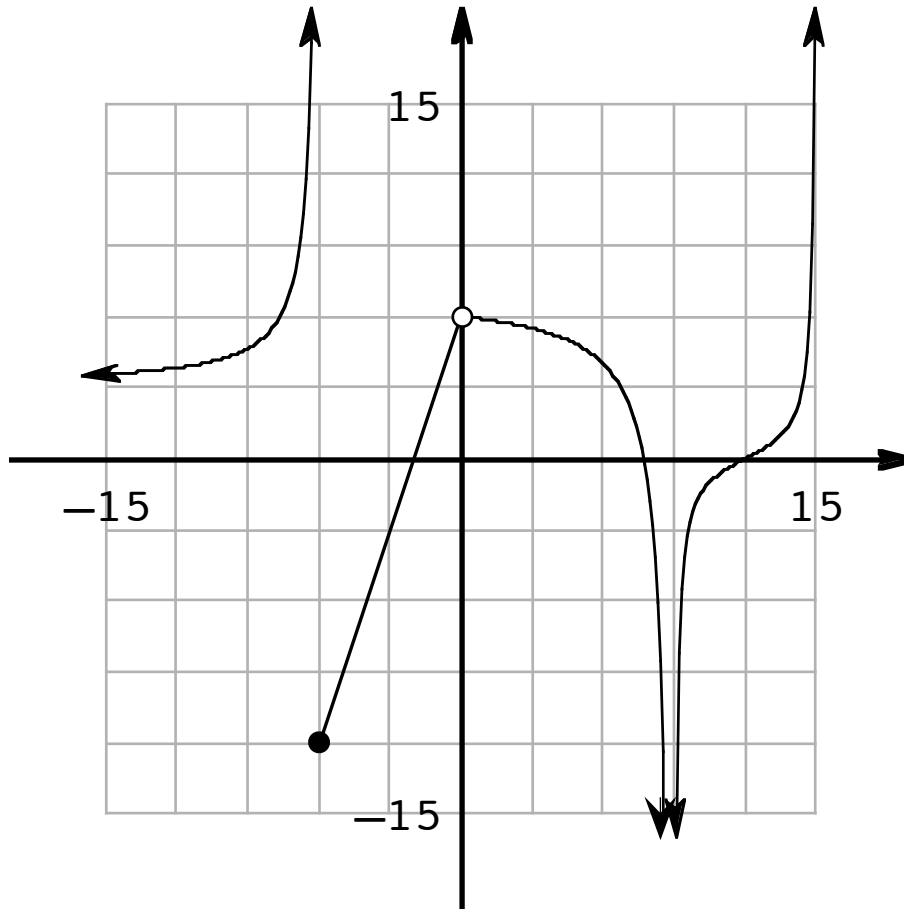
c) Briefly discuss the procedure you used to find average velocity. **WHY** does your procedure calculate average velocity? (NOTE: I'm NOT asking about instantaneous velocity here – only **AVERAGE!**)

(4)

d) Explain **WHY** shorter intervals are better in terms of approximating instantaneous velocity using average velocity.

(5)

2) For the function $g(x)$ whose graph is shown below, find each limit. Pay attention to the scale on the axes or all your answers will be wrong. Fail. (2 pts. each)



$$\lim_{x \rightarrow 0} f(x) = \underline{\hspace{2cm}}$$

$$\lim_{x \rightarrow -6^+} f(x) = \underline{\hspace{2cm}}$$

$$\lim_{x \rightarrow 9} f(x) = \underline{\hspace{2cm}}$$

$$\lim_{x \rightarrow -6} f(x) = \underline{\hspace{2cm}}$$

Extra Credit: On May 1, 2003, President Bush declared an end to major combat operations in Iraq in this now-infamous “mission accomplished” speech. How many more months passed before the military actually left Iraq?