

Directions: As announced in class, you are not only allowed to use your notes, you are EXPECTED to use your notes. You can use the book as well, but make sure you're explaining things as we discussed them in class – that's often pretty different than what you might find in the book. But make sure that you don't discuss this with ANYONE OTHER THAN ME in ANY way – that would be cheating. Obviously, using the Internet as a resource is cheating as well. Don't be a jerk. Hint: The amount of space that I leave for a question helps to indicate how extensive I think your answer should be. If I give you a page and a half and you write two sentences, you should not expect a decent score. If you need more space for any question, you can either use the back, or attach another sheet. THIS IS DUE AT THE **BEGINNING** OF CLASS ON MONDAY, NO EXCEPTIONS WITHOUT PRIOR CLEARANCE.

1) The biggest topic we've covered so far is developing a formula for finding the exact instantaneous velocity of a moving object if you know a formula that describes the position.

a) Explain why we can never be POSITIVE we're getting an exact instantaneous velocity by finding the average velocity on specific intervals, no matter how small those intervals are. (5 points)

b) Over the next couple of pages, explain everything you know about how we developed the formula for finding exact velocity, starting with how we approximated instantaneous velocity using average velocity. I have no intention of telling you how many words you should write, but I will say this: Since I'm asking you to write everything you know about this topic, if you don't write much, it means you don't know much. See where I'm going with this? (12)

2) True or false: If I know that $f(4) = 10$ for some function, then I know that $\lim_{x \rightarrow 4} f(x) = 10$. (0)

3) a) If you answered "true" for #2, go back and change your damn answer, because that statement is false. Explain why. (4)

b) Draw an example of the graph of a function $f(x)$ for which $f(4) = 10$, but the limit as x approaches 4 is NOT 10. (4)