

AP Calc AB Update Wednesday March 18<sup>th</sup>

I hope to receive some instructions today about what distance learning will look like through the month of April. School is now closed through April 30<sup>th</sup>. That is a loss of 6 weeks. I can add 4 weeks to my previous schedule, putting the final exam during the week of May 26<sup>th</sup>. That would create the need to do two weeks of work over the next 6 weeks to stay on pace. So, I am going to wait until next Monday to try and create some sort of work schedule that will prepare you for the final exam.

Preparing for the AP exam is a little different. College board plans have an updated message on Friday. Beginning next Monday, I may be utilizing the materials that they have available through the AP Classroom. They are talking about developing a test you can take at home. I think it is safe to say that a May 5<sup>th</sup> exam is no longer an option. So, relax, we have some time. If you have completed the motion classwork and attempted the homework, then you are on track, even ahead of where you need to be.

Here is a quick overview of the next FRQ topic: Function Analysis

Given a graph of the derivative of a function  $f(x)$ , you should be able to find the following

Intervals where  $f(x)$  is increasing:  $f'(x) > 0$ , Decreasing:  $f'(x) < 0$

Intervals where  $f(x)$  is concave up: Slope of  $f'(x) > 0$ , Concave down: Slope of  $f'(x) < 0$

Points where  $f(x)$  has a relative maximum

$$f'(x) = 0 \text{ or undefined and } f'(x) \text{ changes sign from positive to negative or } f''(x) < 0$$

Points where  $f(x)$  has a relative minimum

$$f'(x) = 0 \text{ or undefined and } f'(x) \text{ changes sign from negative to positive or } f''(x) > 0$$

Inflection Point: Slope of  $f'(x)$  changes sign

Evaluating a function defined as the integral of a given derivative function

Area left to right changes sign. Use geometry or given area values.

Find area to the given initial condition and add initial value

Classwork Problem 1

Basic level problem where all parts following the guidelines above. Be careful with the signs in part d and realize that that area values are given. Be aware of the initial condition.

Classwork Problem 2

Part a is easy, but then they throw in absolute maximum and average rates of change. For absolute maximum, remember to check all critical points and endpoints. Average rate of change is just a slope. You just need to think about which values to subtract in the numerator to get the correct rate of change. On top of that, you need to remember the conditions of the mean value theorem in part d. This is a challenging problem.

Classwork Problem 3

This problem is also challenging because it asks about a function  $g(x)$  but does not give you the derivative. Instead you have the derivative of  $f(x)$ . You need differentiation skills (think chain rule) to get the derivative of  $g(x)$ . The questions are pretty basic, tangent line, local max, second derivative, and average change. You just need to think carefully about the functions you are using.

Classwork problem 4

Parts a and b are straightforward and simple. Like problem 3, you need your differentiation skills to work with a new function  $h(x)$  in part c and  $p(x)$  in part d. Just think through your rules (quotient, chain) and it is not that bad.

I have posted these answers. I am going to wait until Monday to post the motion homework answers and hopefully have a more concrete schedule on Monday.

Mr. Tupaj