

(AP Calculus AB) Distance Learning Activity, Day (3/17/20) (Mathematics)

Overview: Unit 8.1 [Unit 6-7 Enrichment]

The students will be able to understand the definite integral as a measure of accumulating change as referenced by the Total Change Theorem.

Estimated Time: Approximately [45-60 minutes]

Explanation:

- ⊙ How does the definite integral represent the total change?
- ⊙ How can we apply the definite integral to applied scenarios involving rate functions to calculate the total change over an interval of time?
- ⊙ How are displacement & total distance traveled calculations different when working with a velocity function?

Materials that are Needed:

OneNote / CBSD email

Things to know:

We have already covered this concept during class in Unit 6/7 as the Fundamental Theorem of Calculus (Part 1), which states: $\int_a^b f(x)dx = F(b) - F(a)$. We have discussed this relationship as an accumulation from [a,b] with the understanding that $f(x)$ is a function of change (ex: velocity or rate function). We have also addressed this as an exact measure of Area when applied to a graph. This is application of the definite integral that you will need to know/apply in the AP Calc AB curriculum. This lesson/activity formalizes this relationship as the **Total Change Theorem** & allows us to apply it to situations involving change, but it is surely not a new connection for this group. You will be asked to apply it both in a Non-Calc & Calculator format [Math 9 option].

I am available for questions regarding content through your CBSD email account. Please be specific about your question if referencing a problem so I may provide you meaningful feedback (For example, Unit 7.1 – WS, #3).

Tasks:

1. Instructional Input Activity
Student will go to our Class OneNote and Read/Take Notes covering (Unit 8.1 - Total Change Theorem [Unit 6/7 – Enrichment Concept]). A completed version is included with various examples needed for the practice WS.
2. Guided Practice Activity
Try the practice problems included with the lesson and compare with the Solutions provided.
3. Independent Practice Activity
Complete Unit 8.1 – WS (Total Change Thm) and make corrections/revisions using the Solutions provided. Feel free to email me with follow-up questions.