

MTH 201: Calculus

Daily Preparation, Module 12B: The Total Change Theorem

Due by: 11:59pm ET, **Tuesday, December 1** (Back to the original schedule)

Estimated time requirement: About 45-60 minutes for the whole assignment. *If you have worked on this assignment for 30 minutes and you're not at least halfway done, DON'T work any further — instead, stop and ask for help* on the `#dailyprep` channel on CampusWire.

Overview

Our last Daily Prep of the semester! And in this lesson, we'll work with one last important result that connects definite integrals and the FTC to everyday life – the **Total Change Theorem**, which tells us that the integral of a rate of change gives a total change.

What you will learn

Learning Targets addressed in this module:

- **INT.4 (CORE):** I can evaluate a definite integral using the Fundamental Theorem of Calculus.
- **INT.5:** I can correctly antidifferentiate basic functions and identify antiderivatives.

BEFORE your class meeting, use the Resources for Learning (below) to learn how to do the following:

- State the Total Change Theorem.
- Explain how a definite integral can be used to solve a problem about total change.

DURING AND AFTER your class meeting, you will learn how to do the following:

- Find the total amount of change in a function on an interval, using a definite integral.

Resources for Learning

Video: Just one video this time:

- Screencast 4.4.4 – Application of the Total Change Theorem (6:41)
https://www.youtube.com/watch?v=Q8ZKTA4w9q0&list=PL9bljQJDwfGuXQHUS5Jkmum_CFILoCZX-&index=91

Text: Re-read [the section on the Total Change Theorem in Section 4.4 in the Active Calculus text](#).

You are free to search for and use other resources in addition to, or instead of the above, as long as you can work the exercises below.

Exercises

These are on Classkick. Go to app.classkick.com and log in, and it should be in your list. If you need a code:

- Section 02: 4AT EE8
- Section 04: TE9 483

Submission, grading, and getting help

Submitting your work: Just work through the activities; your work is saved as you go.

How this is graded: Daily Prep assignments are graded on the basis of *completeness and effort*: If your submission has **all parts completed** (no blank entries, even if left blank accidentally) and **a good-faith effort to provide a correct solution or explanation is given** (no responses of “I don’t know” or “I didn’t understand”) and **the work is submitted on time**, it gets a “check”. Otherwise it gets an “x”. If you are stuck on an item, you’re expected to ask questions and give your best effort.

Getting help on this assignment: *You may work with others on this assignment, but you may not copy each others’ answers.* Evidence of copying will be treated as academic dishonesty. You may also ask questions on the #dailyprep channel on CampusWire, but you may not ask simply to be given the answers; giving and receiving answers on CampusWire will be treated as academic dishonesty.