MTH 201: Calculus

Daily Preparation, Module 4B: Derivatives of sine and cosine

Due by: 11:59pm ET, Tuesday, September 29

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

In Module 4B, we introduce the derivatives of two more functions that are elementary but different than the ones we saw in 4A — the **sine** and **cosine** functions from trigonometry. Having their derivatives available to us will allow us to find rates of change in functions that oscillate back and forth (systems of springs, market prices, temperature patterns, etc.).

What you will learn

Learning Targets addressed in this module:

- **DC.1 (CORE)**: I can compute derivatives correctly for power, polynomial, and exponential functions and the sine and cosine functions, and basic combinations of these (constant multiples, sums, differences).

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

- *Trigonometry review*: State the values of $\sin(x)$ and $\cos(x)$ for the 16 special angles shown on the unit circle.
- State the derivatives of the functions $y = \sin(x)$ and $y = \cos(x)$.

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

- Calculate derivatives of basic combinations of $\sin(x)$ and $\cos(x)$.
- Use basic derivative rules to solve problems about slopes, velocities, and rates of change involving $\sin(x)$, $\cos(x)$, and simple combinations of these two functions with other elementary functions.

Resources for Learning

Text: Read through Section 2.2 of the *Active Calculus* textbook. Work through the examples and all

interactive exercises found at the end of the section.

Video: No videos to watch this time.

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

The exercises for this Daily Prep are on Desmos. **Use the link for your section**:

- Section 02 (morning): https://student.desmos.com/activitybuilder/student-greeting/5f636251f811940c9080f3e2
- Section 04 (afternoon): https://student.desmos.com/activitybuilder/student-greeting/5f636251f811940c9080f3e2

Your work is saved as you go, so there's no "submit" step at the end.

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.