MTH 201: Calculus

Daily Preparation, Module 5B: Derivatives of other trigonometric functions

Due by: 11:59pm ET, Tuesday, October 6

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

With the Product and Quotient Rules under our belts, we can now add some more derivative rules to our toolbox — specifically, we can now find the derivatives of the remaining six trigonometric functions of **tangent**, **cotangent**, **secant**, and **cosecant**. That's the focus of Module 5B along with getting more practice on using the Product and Quotient Rules in general.

What you will learn

Learning Targets addressed in this module:

- **DC.2 (CORE)**: I can compute derivatives correctly for products, quotients, and composites of functions.
- **DC.3**: I can compute derivatives correctly using multiple rules in combination.

We won't be fully prepared for these Learning Targets until the completion of Module 6.

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

- *Trigonometry review*: State the definitions of the functions $\tan(x)$, $\cot(x)$, $\sec(x)$, and $\csc(x)$, and find their values for the 16 special angles shown on the unit circle.
- Explain how the Quotient Rule is used to find the derivative of $\tan(x)$, $\cot(x)$, $\sec(x)$, and $\csc(x)$.
- State the derivatives of $\tan(x)$, $\cot(x)$, $\sec(x)$, and $\csc(x)$.

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

- Use derivative rules (including the Product and Quotient Rule, but also older rules) to solve problems about slopes, velocities, and rates of change involving basic functions.
- Compute derivatives that involve a combination of all the rules we've learned up to this point.

Resources for Learning

Text: Read through [Section 2.3](https://activecalculus.org/single/sec-2-3-prod-quot.html of the *Active Calculus* textbook. You can just skim the discussion at the beginning of 2.3.1 and start paying full attention at the box titled "Product Rule". Work through the examples and all interactive exercises found at the end of the section.

Video: Watch the following from the GVSUMath Calculus playlist:

- Screencast 2.4.1: Quick Review - Derivatives of other trigonometric functions (1:56) https://www.youtube.com/watch?v=wARt0oF46wg&list=PL9bljQJDwfGuXQHuS5Jkmum_CFILoCZX-&index=37
- Screencast 2.4.2: Examples of other trig derivatives (9:47) https://www.youtube.com/watch?v=43UXLvQgmwY&list=PL9bljQJDwfGuXQHuS5Jkmum_CFILoCZX-&index=38

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 are on Classkick, in "Module 5B Daily Prep".

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.