

Reading Assignment for Section 3.5

MATH 130: Calculus I, Section 4
Spring Semester 2017

Follow the general guidelines for the Reading Assignment (the salmon colored handout).

Be sure to include and label all four standard parts 1,2,3,4 of the Reading Assignment in what you hand in. Be sure to **staple** together pages if you have more than one, and include your **name** at the top of the page. Neatness is appreciated!!!

Due: at the beginning of class on Friday, March 3rd

Read:

Section 3.5: Derivatives of Trigonometric Functions, pages 163-168

Notes: Expanding our abilities to differentiate more functions, we discover how to differentiate trigonometric functions. This reading discusses some special limits involving $\sin x$ and $\cos x$. Then we use these special limits to derive the formulas for the derivatives of trigonometric functions using the definition of the derivative. Since the other four trigonometric functions can be written in terms of $\sin x$ and $\cos x$, the derivatives of the rest can be determined using the quotient rule. Combining these new formulas with our product and quotient rules increases the number of functions we can now differentiate by A LOT!!!

Remember that your answers should include complete sentences for every question. Be sure to answer all parts of each question!

Reading Questions for part (1), Response:

a) (i) There is a special limit involving $\sin x$ in this section. What is it? (ii) What theorem is used to prove the value of this limit? (iii) What three things are used to create the inequalities for the proof? Briefly show with a diagram why you know these three fulfill the inequality. You do NOT need to explain where the formulas come from or even mention the formulas. Just show what things are being compared and how they relate to each other. (Don't forget to use sentences!!!)

b) Use the quotient rule to determine the derivative of $\sec x$. (See Example 3 on page 167 for how this is done for $\tan x$.)

Remember parts 2-4 on the salmon handout!

Optional, but highly recommended: Make flashcards for material in Section 3.4. Certainly you should have one for the product rule and one for the quotient rule!