MATH 19 – Exam 2 Details

The second exam will take place in class on Wednesday, March 20. You will have the whole class period to take the exam, but I will also try to offer up to 15 minutes after class. I do not anticipate that the exam will take this long. This exam will be similar in length and format as the first exam. You are allowed a scientific or graphing calculator. **Please note that academic integrity violations will be taken seriously, and will be met with serious consequences.**

The exam covers sections 3.2-3.6 and part of 4.1. The topics you should know are:

- **3.2 Derivatives of Exponential and Logarithmic Functions** – Properties of exponents and logarithms, derivative of e^x and $\ln(x)$. You do not need to know the derivative of b^x or $\log_b(x)$.

- **3.3 Derivatives of Products and Quotients** – Product rule, quotient rule.

- **3.4 The Chain Rule** – Composition of functions, chain rule.

- **3.5 Implicit Differentiation** – Implicit differentiation problems.

- **3.6 Related Rates** – ONLY Example 1 and 2 from notes. You do not need to study Example 3.

- **4.1 (beginning only) First Derivative and Graphs** – Know the statement of the important fact ($f' > 0$ means f increasing, $f' < 0$ means f decreasing). Make a sign chart for f' to identify where f is increasing or decreasing.

- **Miscellaneous** – Find the slope (or equation) of the tangent line at a given point. Find where the tangent line is horizontal (where the derivative is zero). **Bonus:** Prove the quotient rule using the product rule (see posted notes).

To give you an idea of what to prioritize: the exam will be weighted <u>at least</u> 60% towards 3.2-3.4 (plus miscellaneous). That is, make sure you know the derivative rules and how to apply them correctly! Section 3.5 will be weighted approximately 20%. Section 3.6 and 4.1 will be weighted approximately 10% each. Note that section 3.5, 3.6, and 4.1 all depend on your ability to take derivatives correctly!

Study resources:

- Class notes, quiz 4 + 5

- Exam 2 Notes

- **Exam 2 Practice Exam (the actual exam will be very similar)**

- Exam 2 Additional Problems

- Extra office hours: Mon 1:30-3pm, Wed 12:30-1:45pm. Help sessions: Mon-Wed 5-7pm (I'll be there Mon 5-7pm).