

Exam 2: Some problems for review

The exam will be taken in class (SCB 200/201) on Tuesday 10/08. You will bring your own laptop and pocket calculator (of any kind). You are not allowed to use any app on your laptop, even a calculator app. Your web browser should occupy the full screen at all time. Phones and notecard are not allowed. The instructor will provide scratched papers for you. When you are seated, go to Canvas and click on Exam 2 in Week 6 module. You will be directed to WebAssign, which will ask you for an access code. The instructor will give you the access code.

The textbook sections to be covered are 2.1-2.8, 3.1, 3.2. You should review the homework problems, worksheets, quizzes, examples given in the lectures. It is always a good idea to study for the exam with someone. Some problems to practice:

1) Find the equations of the tangent line and normal line to the curve $y = \frac{3x}{1+5x^2}$ at $\left(1, \frac{1}{2}\right)$.

2) Differentiate the function $\frac{s-\sqrt{s}}{s^2}$ and simplify your answer.

3) Differentiate the function $\left(\frac{1}{u} + \frac{1}{u^2}\right)\left(u + \frac{1}{u}\right)$ and simplify your answer.

4) Find f' and f'' where $f(x) = (x + x\sqrt{x})e^x$.

5) Find the limit

$$\lim_{x \rightarrow \infty} (\sqrt{x^2 + 3x - 1} - x)$$

6) Let

$$g(x) = \begin{cases} 2x - x^2 & \text{if } 0 \leq x \leq 2 \\ 2 - x & \text{if } 2 < x \leq 3 \\ x - 4 & \text{if } 3 < x < 4 \\ \pi & \text{if } x \geq 4 \end{cases}$$

For each of the numbers 2, 3, and 4, determine whether t is continuous from the left, continuous from the right, or continuous at the number.