

Review for Exam 1

MAT 229, Spring 2021

Week 3

Exam rules

- The first exam is scheduled for this weekend. It consists of two parts, an lmath part and a pen and paper part taken under Lockdown Browser.
 - You can use Mathematica on the lmath part. On the pen and paper there are no notes, books, Mathematica, or other devices allowed.
 - Each part has a set time limit of 30 minutes. You can take each part separately any time between Friday, January 29, 8:00 pm ET and Sunday, January 31, 8:00 ET.
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Format

- Questions will be similar to daily homework questions and weekly assignment questions.
 - On the pen and paper part you must show your work. For example, if you need to evaluate a definite integral, you must derive the antiderivative and express how you evaluate it.
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Topics

- From Calculus 1
 - Tangent lines
 - Absolute max/min
 - Intervals of increase/decrease and local max/min
 - Intervals of concavity and inflection points
 - Area
 - Volumes of solids of revolution
- Inverse functions
 - One-to-one functions
 - Properties of inverse functions
 - Compute the inverse to a given function
- Exponential functions

- Exponent properties
- Compute their limits, derivatives, and integrals ($\frac{d}{dx}(e^x) = e^x$, $\int e^x dx = e^x + C$)
- Logarithms
 - Solve exponential equations
 - Logarithm properties
- Logarithm derivatives
 - Compute their limits, derivatives, and integrals ($\frac{d}{dx}(\ln(x)) = \frac{1}{x}$, $\int \frac{1}{x} dx = \ln(|x|) + C$)
- Inverse trigonometry
 - Inverse sine, inverse cosine, and inverse tangent
 - Compute their limits, derivatives, and integrals ($\frac{d}{dx}(\sin^{-1}(x)) = \frac{1}{\sqrt{1-x^2}}$, $\frac{d}{dx}(\cos^{-1}(x)) = -\frac{1}{\sqrt{1-x^2}}$,
 $\frac{d}{dx}(\tan^{-1}(x)) = \frac{1}{1+x^2}$)

Studying

- Try problems you haven't worked from the exercises from the corresponding sections of either Stewart's calculus book or the Active Calculus textbook.
- Review the weekend assignments. Remember which ones caused you the most trouble. Find similar examples in the textbook and the posted outlines, then try similar exercises in the textbook.
- Contact me by email if you have questions. You can also visit the Math/Stats Tutoring Lab.