

# Math 100:V02, Winter Term 2024

## Pre-Midterm Sheet

February 8, 2024

### Material

The material for midterm 1 consists of the material covered in the lectures up Taylor expansion (discussed in lecture on February 8), including

- The ladder of functions, asymptotics at  $\infty$ , asymptotics at 0, asymptotics at  $a$ .
- Limits, one-sided limits, blow-up and limits in the extended sense, limits at infinity.
- The linear approximation and the definition of the derivative,
- Continuity: gluing functions and derivatives.
- Differentiation rules: linearity, product rule, quotient rule, chain rule. Partial derivatives.
- Differentiation table: exponentials, logarithms, trigonometric functions
- Exponential growth and decay: finding solutions to the equation  $y' = ry$ .
- Applications of the chain rule: implicit differentiation and related rates.
- Shape of the curve: increase/decrease, concavity and convexity.
- Taylor expansion: definition of the expansion, computing by repeated differentiation, reading off coefficients.

### Structure

This midterm is about *mastering* the basic skills of this course.

- The exam will last 50 minutes and consist of 15 questions, which will be marked correct/incorrect based on the final answer only.

- Students are required to score at least 80% (12/15) to pass the course.
- There will be three retakes, the last of which will be a section of the final exam.

For practice problems use worksheets, as well as the CLP problem book and Schaum's Outline of Theory and Problems of Differential and Integral Calculus

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## **Practicalities**

The exam will take place during class on Thursday, February 15.