

Exam 3 Information – Math 207 DE

Spring 2019

Exam 3 will cover the following material

- Reviews for Exam 2 and Exam 3
- All lecture notes posted on the class's web site for Classes 1-19

Students need to be prepared to **state**:

Definitions such as relative and absolute extrema, least upper bound, the definition of the derivative at a number x , the definition of continuity (both at a point and on an interval), the least upper bound property of real numbers; and Theorems such as the Intermediate Value Theorem (both versions), Extreme Value Theorem, Rolle's Theorem, the Mean Value Theorem.

Students need to be prepared to **prove**: (note that these proofs are all posted on the lecture notes)

- The limit of $\sin x/x$ as x approaches zero
- Compute derivatives as limits of the difference quotient for algebraic functions and those of $\sin x$, $\cos x$, $\ln x$
- The constant, sum, and constant multiple rules for derivatives
- If f is differentiable at a number c , then it is continuous there
- The product and quotient rules for derivatives
- If f has a relative maximum (or minimum) at $x=c$ and is differentiable there, then $f'(c)=0$
- Find the derivative for $\log_a x$, e^x and a^x
- A bounded increasing sequence has a finite limit
- The Intermediate Value Theorem (both versions)
- The Mean Value Theorem
- If $f'(x)=0$ for all x , then f is a constant function.