

Exam 1 Objectives

For Exam #1, a well-prepared student should be able to

- state a definition for each relevant term (e.g., antiderivative, definite integral,...) equivalent to that used in class
- find antiderivatives of a given function using knowledge of derivative results and rules
- find antiderivatives of a given function using substitution
- read and use summation notation
- compute the exact value of a given simple definite integral using the definition of definite integral (as limit of a Riemann sum)
- estimate or bound the value of a given definite integral
- use properties of definite integrals to simplify or re-express a given expression involving definite integrals
- state the First Fundamental Theorem of Calculus
- use the First Fundamental Theorem of Calculus to compute the derivative of a function defined in terms of integration
- state the Second Fundamental Theorem of Calculus
- use the Second Fundamental Theorem of Calculus to compute the value of a given definite integral
- use properties of definite integrals for symmetric functions (even or odd) to simplify or re-express a given expression involving definite integrals
- set up and evaluate an appropriate definite integral to compute the accumulated change for a given rate of change and interval
- set up and evaluate an appropriate definite integral to compute the area (signed or total) of a given region bounded by the graph of a function and the horizontal axis
- distinguish among (1) the definition of definite integral, (2) the evaluation of definite integral given by the conclusion of FTC2, and (3) an interpretation of definite integral as accumulation or area