

Norwalk Community College
Learning Outcomes for MAT 254 – Calculus I

After completing Calculus I, the student should be able to:

- Evaluate limits using a numerical, graphical, or algebraic approach.
- Define and apply the definition of continuity of a function at a point or on an interval.
- Determine where and how a function is continuous or discontinuous.
- Find the derivative of a function using the definition.
- Find the derivative of a function using the basic rules of differentiation (sum rule, product rule, quotient rule, and chain rule).
- Find higher-order derivatives.
- Determine where and how a function is differentiable or non-differentiable.
- Apply the derivative as the rate of change of a function.
- Differentiate implicitly.
- Solve an application problem involving related rates.
- Find the absolute maximum or minimum value of a function.
- Apply Rolle's Theorem or the Mean Value Theorem and determine when they apply.
- Apply the First and Second Derivatives Tests to determine relative extrema of a function.
- Determine where a function is concave up or concave down and find points of inflection.
- Analyze and sketch the graph of a function using method of calculus.
- Solve problems involving optimization of a function.
- Find the general solution of a simple differential equation by integration.
- Find indefinite integrals using basic rules and by substitution.
- Determine the area under the graph of a function by approximation techniques and using a Riemann sum.
- Determine the area under the graph of a function as a definite integral.
- Evaluate definite integrals using properties and the Fundamental Theorem of Calculus.
- Apply the Mean Value Theorem for Integrals.
- Apply the Second Fundamental Theorem of Calculus.
- Approximate a definite integral using the Trapezoidal Rule or Simpson's Rule.
- Find the derivative of the inverse of a function.
- Find the derivative or anti-derivative of logarithmic and exponential functions.