Norwalk Community College
Learning Outcomes for MAT 254 – Calculus II

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

- Find the inverse of a function and determine if a function has an inverse.
- Find the derivative of the inverse of a function.
- Find derivatives and anti-derivatives of logarithmic and exponential functions.
- Find exponential or logarithmic functions to model growth and decay applications.
- Differentiate and integrate trigonometric functions and inverse trigonometric functions.
- Differentiate and integration hyperbolic functions.
- Integrate a function using the method of completing the square.
- Find the area between two curves by integration.
- Find the volume of a solid of revolution using the disk, washer, and shell methods.
- Find the volume of a solid with known cross sections.
- Find the arc length of a smooth curve and the area of a surface of revolution.
- Integrate a function by using Integration by Parts, Trigonometric Substitution, Partial Fraction Decomposition, and Reduction Formulas.
- Evaluate integrals involving powers of trigonometric functions.
- Evaluate integrals using Tables of Integrals or using a graphing calculator.
- Evaluate limits by using L'Hospital's Rule.
- Evaluate improper integrals.
- Write the formula for the n^{th} term of a sequence.
- Determine whether a sequence converges or diverges.
- Determine whether a series converges using p-series, Integral Test, Direct Comparison, Limit Comparison, Alternating Series, Ratio Test, or the Root Test.
- Approximate the sum of an alternating series.
- Classify a convergent series as absolute or conditional.
- Find Taylor and Maclaurin polynomial approximations of elementary functions.
- Find the radius and interval of convergence and endpoint convergence of a power series.
- Differentiate and integrate power series.
- Find a geometric series, Taylor series, Maclaurin series, or binomial series for a function.
- Sketch the graph of a plane curve given by a set of parametric equations.
- Find a set of parametric equations to represent a curve in the plane.
- Convert between rectangular coordinates and polar coordinates.
- Sketch the graph of an equation given in polar form.