

Norwalk Community College
Learning Outcomes for MAT 186 – Precalculus

After completing Precalculus, the student should be able to:

- Algebraically and graphically analyze functions (including polynomial, radical, absolute value, piecewise-defined, rational, exponential, and logarithmic), determining any intervals where the function is increasing or decreasing, intercepts, asymptotes, symmetry, maxima and minima.
- Apply transformations, including translations, reflections, stretching, and compressing.
- Perform binary operations on functions, including addition, subtraction, multiplication, division, and composition.
- Find the zeros (real and complex) of a polynomial function.
- Solve polynomial and rational inequalities.
- Determine and analyze the inverse of a function.
- Simplify expressions using the properties of exponents and logarithms.
- Solve exponential and logarithmic equations.
- Solve application problems involving exponential and logarithmic models.
- Convert angles to degrees or radians.
- Compute arc length, area of a sector, linear and angular velocity.
- Determine the values of trigonometric functions and the inverse trigonometric functions.
- Graph the sine, cosine, and tangent functions using phase shifts, periodicity, and amplitude.
- Simplify trigonometric expressions and establish or verify trigonometric identities.
- Solve trigonometric equations.
- Solve right triangles using right-angle trigonometry.
- Solve oblique triangles using the Law of Sines and Law of Cosines.
- Solve applications involving triangles.
- Solve nonlinear systems of equations.
- Decompose a rational function into partial fractions.