

*Montgomery College - Department of Mathematics
Germantown Campus*

**MA180 – Precalculus
4 Semester Hours**

Description Topics from advanced algebra, trigonometry, conics, and functions; applied problems. Designed to prepare students for MA 181 (Calculus I).

MA180 meets for 5 hours each week.

Prerequisites A grade of C or better in MA 103 and MA 105, appropriate score on mathematics assessment test, or consent of department.

Assessment levels: EN 101/101A, RD 120.

- Topics**
- I. Functions and their graphs
 1. Domain and range
 2. Operations including composition
 3. Graphs
 4. Transformations: shifting, reflections, and shrinking/stretching
 5. Piecewise-defined
 6. Inverses
 7. Symmetry
 8. Intervals of increase, decrease, constant
 9. Graphing utility skills: maximum, minimum, and intersect
 - II. Polynomial and rational functions
 1. Remainder and Factor Theorems
 2. Real and rational zeros
 3. Local and end behavior
 4. Complex zeros
 5. Fundamental Theorem of Algebra
 6. Intermediate Value Theorem
 7. Solutions of polynomial and rational inequalities
 - III. Exponential and Logarithmic Functions
 1. Definitions
 2. Graphs
 3. Properties of logarithms

- 4. Solutions of Exponential and Logarithmic Equations
- 5. Growth & Decay
- IV. Trigonometric Functions
 - 1. Period, Amplitude, Phase Shift
 - 2. Inverse Trigonometric Functions
 - 3. Fundamental Trigonometric Identities
 - 4. Solutions of Trigonometric Equations
- V. Analytic Trigonometry and Geometry
 - 1. Identity Proofs and Exact Values
 - 2. Law of Sines and Law of Cosines
 - 3. Circles
 - 4. Parametric Equations
- VI. Curve Fitting and Data Modeling
 - 1. Linear, quadratic, cubic, exponential, and/or sine regressions

Text

Precalculus: Functions and Graphs. Swokowski and Cole, 11th ed.
Brooks/Cole.