

## Course: Precalculus Refresher

### Course Description:

This is a preparatory course for calculus and covers the following topics: algebraic, exponential, logarithmic, trigonometric and inverse trigonometric functions; trigonometric equations and trigonometric identities.

### Topics Covered:

- Basic concepts of functions
  - ✓ Determine if a relation is a function.
  - ✓ Identify the domain and range of a function.
  - ✓ Use the graph of a function to identify characteristics of the function such as symmetry and intervals of increasing, decreasing, and constant behavior.
  - ✓ Recognize graphs of common functions and graph transformations of these common functions.
  - ✓ Combine functions arithmetically and through composition and identify the domain of the resulting functions.
  - ✓ Describe and explain the fundamental concepts associated with inverse functions including the definition of one-to-one functions and the graphical interpretation of inverses.
- Trigonometric functions
  - ✓ Define, evaluate and graph trigonometric functions from both the real number and angle perspectives.
- Inverse trigonometric functions
  - ✓ Define, evaluate and graph-inverse trigonometric functions.
- Trigonometric identities
  - ✓ Use the Law of Sines and the Law of Cosines to compute angle measures and side lengths of triangles.
  - ✓ Prove trigonometric identities using the addition formulas, double-angle formulas, and half-angle formulas for the sine, cosine and tangent functions.
  - ✓ Simplify trigonometric expressions.
  - ✓ Solve equations which contain trigonometric expressions.
- Exponential and logarithmic functions
  - ✓ Simplify exponential and logarithmic expressions and solve exponential and logarithmic equations.
  - ✓ Solve applied problems using exponential and logarithmic functions

**Duration: 20 days**