

Pre-Calculus

Course Outline

Functions and Graphs

Discriminate between functions and relations

Find the range and domain of a function and graph it on a suitable scale

Determine the symmetry of functions algebraically and graphically

Evaluate composite functions and find their inverses

Polynomials, Rational and Exponential Functions

Solve polynomial functions graphically and using factor and remainder theorem

Find the solution of quadrants (all three methods) and the type of solutions using the discriminant

Graph polynomial functions

Understand graphing techniques

Solve linear, quadratic and polynomial inequalities

Perform operations on complex numbers

Graph logarithmic and exponential functions

Perform operations on logarithms and exponents

Solve logarithms and exponents

Use change of base formula

Trigonometry

Determine the radian measure of an angle given radius and arc length

Interpret and draw graphs of sin, cosine and tangent functions

Prove and use trigonometric identities

Apply trig functions to calculate amplitude, cycle and phase shifts

Solve problems using Sine and Cosine rules

Analytic Geometry

- Perform operations on vectors and matrices
- Solve problems using graphs on the complex plane
- Use the equations and graphs of conic sections to solve problems
- Use polar coordinates and parametric equations

Systems of Equations and Inequalities

- Solve systems of equations with and without using matrices
- Find and use the determinant of a matrix
- Solve systems of inequalities
- Solve linear programming problems

Discrete Algebra

- Find the common difference and sum of an arithmetic progression
- Find the common ratio and sum of a geometric series
- Use the binomial theorem
- Prove by inductions

Introductions of Limits

- Find the limits of functions as asymptotes