Unit 1: Functions

TARGETS

A – Find extrema, zeroes, in odd or even functions

B – Analyze functions using specific properties
(discussion of end behavior, i.e. lim as x -> ±∞)

C – Build functions from functions (using sum, difference, multiplication, division, composition, and inverse)

D – Identify and analyze the parent functions

E – Rigid and non-rigid transformation of quadratic, cubic, square root, and absolute value functions

F – Model real world situations and use regressions with the use of functions

Unit 2: Polynomials and Rational Functions

TARGETS

A – Graph and solve quadratic functions

B – Graph, solve, and analyze polynomial functions

C – Find real and complex zeroes of polynomials by synthetic and long division

D – Construct polynomials given real or complex zeroes

E – Understand the Fundamental Theorem of Algebra

F – Graph, solve, and analyze rational functions

Unit 3: Exponential and Logarithmic Functions

TARGETS

A – Identify and analyze properties of exponential, logarithmic, and logistic functions and their graphs

B – Know and understand the inverse realtionships of exponential and logarithmic equations

C – Understand properties of common and natural logarithmic functions

D – Rigid and non-rigid tranformation of exponential and logarithmic functions

E – Know and apply product, quotient and power rules of logarithmic functions

F – Model real world situations and use regressions with the use of functions

G – Solve real-world applications using exponential and logarithmic functions

Unit 4: Analytic Geometry

TARGETS

A – Investigate the geometric properties of parabolas (vertex, focus, and directrix)

B – Derive the standard equation of a parabola and graph given two or three criterion

C – Investigate the geometric properties of ellipses (vertices, foci, major/minor axes, and pythagorean relation)

D – Derive the standard equation of an ellipse and graph given two or three criterion

E – Investigate the geometric properties of hyperbolas (vertices, foci, transverse/conjugate axes, asymptotes, and pythagorean relation)

F – Derive the standard equation of a hyperbola and graph given two or three criterion

Unit 5: Trigonometric Functions

TARGETS

A – Describe and convert between radian and degree measure

B – Generate the unit circle from special right triangles

C – Evaluate the trigonometric functions and expressions using the unit circle

D – Use reference angles to evaluate trigonometric ratios given specific constraints

E – Rigid and non-rigid transformations of sinusoids

F – Evaluate inverse and composite trigonometric functions and expressions using the unit circle

Unit 6: Analytic Trigonometry

TARGETS

A – Verify, evaluate, and apply trigonometric identities and formulas

B – Prove trigonometric identities

C – Solve equations using trigonometric identities

D – Use Law of Sines and Law of Cosines to solve triangles

Unit 7: Discrete Mathematics

TARGETS

A – Expand the power of a binomial using the Binomial Theorem

B – Generate and identify the explicit rule for arithmetic sequences and series

C – Generate and identify the explicit rule for geometric sequences and series

D – Calculate the sums of finite and infinite series

Unit 8: Vectors

TARGETS

A – Perform vector operations: scalar multiple and sums and represent them graphically

B – Perform vector operations: magnitude, direction angle, and unit vector

C – Calculate and use properties of the Dot Product

D – Apply properties of vectors to real life situations

Unit 9: Limits (Beyond the Standards)

TARGETS

A – Evaluate a limit of a function algebraically

B – Evaluate a limit of a function numerically

C – Evaluate a limit of a function graphically

D – Calculate one-sided limits and two-sided limits