

PRE-CALCULUS

Course Description:

Pre-Calculus with Trigonometry will emphasize trigonometry, proof in trigonometry, 2-D and 3-D analytic geometry, polynomial, rational, exponential and logarithmic functions, polar coordinates, sequences and series, and limits.

Unit 1 - Introductory Skills

As evidenced based on classroom assessments, the student is able to:

- LT1.1A Represent linear functions in multiple ways
- LT1.1B Evaluate function notation
- LT1.2 Write linear functions from characteristics or data
- LT1.3 Solve equations by factoring and by graphing

Unit 2 - Functions and Limits

As evidenced based on classroom assessments, the student is able to:

- LT2.1 Understand what functions are and identify their inputs/outputs
- LT2.2 Identify different types of functions, their domain, range and characteristics
- LT2.3A Identify discontinuities and their types
- LT2.3B Evaluate limits graphically
- LT2.4 Identify vertical and horizontal asymptotes using limit notation

Unit 3 - Function Analysis

As evidenced based on classroom assessments, the student is able to:

- LT3.1 Identify a function's discontinuities and domains
- LT3.2 Identify a function's extrema, end-behavior, and intervals of inc/dec.
- LT3.3 Evaluate, graph, write, and analyze(continuity) piecewise functions

Unit 4 - Function Algebra

As evidenced based on classroom assessments, the student is able to:

- LT4.1 Identify, write and graph parent functions and their transformations
- LT4.2 Identify even and odd functions
- LT4.3A Evaluate and graph operations and compositions of functions
- LT4.3B Write and give the domain of operations and compositions of functions
- LT 4.4 Identify one-to-one functions and their inverses

Unit 5 - Polynomials

As evidenced based on classroom assessments, the student is able to:

- LT5.1A Perform operations on polynomials
- LT5.1B Solve polynomial equations by factoring

- LT5.2A Perform long division and synthetic division on polynomials
- LT5.2B Use the Factor Theorem to identify factors and zeros of polynomial functions
- LT5.3 Identify and graph characteristics of a polynomial function

Unit 6 - Rational Functions

As evidenced based on classroom assessments, the student is able to:

- LT6.1 Solve rational equations
- LT6.2A Simplify complex fractions
- LT6.2B Rationalize fractions
- LT6.3 Graph rational functions
- LT6.4 Model direct, inverse, and joint variations

Unit 7 - Exponential and Logarithmic Functions

As evidenced based on classroom assessments, the student is able to:

- LT7.1A Solve exponential equations using like bases
- LT7.1B Understand exponential growth and decay models
- LT7.2A Use the Laws of Logs to rewrite logarithmic expressions
- LT7.2B Use logs in multiple methods to solve exponential equations
- LT7.2C Solve log equations and write exponential & log inverse functions
- LT7.3A Solve exponential and logarithmic equations
- LT7.3B Solve applications problems involving exponential and logarithmic functions

Unit 8 - Introduction to Trigonometry

As evidenced based on classroom assessments, the student is able to:

- LT8.1 Identify angles in standard position and their measurement in degrees, min, sec
- LT8.2 Identify angles in standard position and their measurements in radians/converting
- LT8.3 Convert and evaluate velocity and angular velocity units
- LT8.4 Solve right triangles and application problems using trigonometry

Unit 9 - Unit Circle

As evidenced based on classroom assessments, the student is able to:

- LT9.1 Evaluate 6 trigonometric functions using reference triangles
- LT9.2 Use reference angles and the unit circle to evaluate exact trigonometry values
- LT9.3 Evaluate trigonometric functions exactly and approximately

Unit 10 - Graphing Trigonometric Functions

As evidenced based on classroom assessments, the student is able to:

- LT10.1 Identify characteristics and graph cosine and sine functions
- LT10.2 Identify phase/ vertical shifts of cosine and sine and graph tangent functions
- LT10.3 Identify characteristics and graph the reciprocal trigonometric functions
- LT10.4A Evaluate inverse trigonometric functions and composition of trig functions
- LT10.4B Graph inverse trigonometric functions

Unit 11 - Trigonometric Identities

As evidenced based on classroom assessments, the student is able to:

- LT11.1 Simplify trig expressions and verify identities using reciprocal identities
- LT11.2 Simplify trig express and verify ident. using negative and Pythagorean identities
- LT11.3 Simplify, verify identities, and evaluate using sum and difference identities
- LT11.4 Simplify, verify identities, and evaluate using double and half angle identities
- LT11.5 Solve trigonometric equations

Unit 12 - Solving Non-Right Triangles

As evidenced based on classroom assessments, the student is able to:

- LT12.1 Use the Law of Sines to solve triangles
- LT12.2 Use the Law of Cosines to solve triangles
- LT12.3 Evaluate the area of a triangle given the height is missing

Unit 13 - Coordinate Systems

As evidenced based on classroom assessments, the student is able to:

- LT13.1 Graph and evaluate midpoints and distances on the 3-D coordinate plane
- LT13.2 Graph on the polar coordinate plane and convert polar to/from rectangular coord.
- LT13.3 Evaluate the area of a triangle given the height is missing

Unit 14 - Sequences and Series

As evidenced based on classroom assessments, the student is able to:

- LT14.1A Work with recursive and explicit formulas to write sequences
- LT14.1B Evaluate series and use sigma notation
- LT14.2 Identify arithmetic & geometric sequences, write explicit formulas, find sums
- LT14.3 Expand powers of binomials using the Binomial Theorem

Unit 15 - Introduction to Calculus

As evidenced based on classroom assessments, the student is able to:

- LT15.1 Evaluate limits analytically by direct substitution, factoring, and rationalizing
- LT15.2 Use the definition of a derivative and write tangent line equations
- LT15.3 Use the power rule to evaluate derivatives

West Salem High School is a Target-Based Grading and Reporting School. The learning targets above appear in the Skyward gradebook. Teachers provide feedback on each learning target to parents and students via the Skyward gradebook using a score of 3 (Proficient), 2 (Approaching), 1 (Needs Support), or 0 (No Evidence).