

Pre Calculus Syllabus (First Semester)

Unit 1: Algebra review

Lesson 01: Review: multiplying and factoring polynomials

Lesson 02: Review: rational expressions, complex fractions

Lesson 03: Review: solving equations

Lesson 04: Review: equations of linear functions (lines)

Lesson 05: Review: solutions of linear systems

Unit 1 review

Test: Unit 1 test

Unit 2: Basic trigonometry

Lesson 01: Angle conventions; definitions of the six trig functions

Lesson 02: Angle units; degrees(minutes & seconds), radians

Lesson 03: Given one trig ratio, find the others

Lesson 04: Special angles (0° , 30° , 60° , 45° , 90° , 180° , 270° , 360°)

Lesson 05: Evaluating trig function on the graphing calculator

Unit 2 review

Test: Unit 2 test

Unit 3: Triangle solutions

Lesson 01: Abstract solutions of right triangles

Lesson 02: Right triangle word problems, triangle area

Lesson 03: Vectors

Lesson 04: Sine law, more triangle area formulas

Lesson 05: Ambiguous case of the sine law

Lesson 06: Cosine law

Cumulative review, unit 3

Unit 3 review

Test: Unit 3 test

Unit 4: Trig identities

Lesson 01: Reciprocal and Pythagorean identities, trig simplifications

Lesson 02: Trig proofs

Lesson 03: Cosine composite angle identities

Lesson 04: Sine composite angle identities

Lesson 05: Tangent composite angle identities

Lesson 06: Product and factor identities, reference angles

Cumulative review, unit 4

Unit 4 review

Unit 4 test

Unit 5: Solving trig equations

Lesson 01: Simple trig equations

Lesson 02: Advanced trig equations

Unit 5 test

Unit 6: Function fundamentals

Lesson 1: Basic function definitions

Lesson 2: More on domain, intercepts, notation, function values

Lesson 3: Function operations, composite functions

Lesson 4: Reflections

Lesson 5: Even and odd functions

Lesson 6: Transformations of functions

Lesson 7: Minimum and maximum

Cumulative review, unit 6

Unit 6 review

Unit 6 test

Unit 7: Quadratic functions (parabolas)

Lesson 1: Transformations of quadratic functions

Lesson 2: Three forms of quadratic functions

Lesson 3: Quadratic calculator applications

Lesson 4: Quadratic area applications

Cumulative review, unit 7

Unit 7 review

Unit 7 test

Unit 8: Special functions

Lesson 1: Square root and semicircle functions

Lesson 2: Absolute value functions ($|f(x)|$ and $f(|x|)$ reflections)

Lesson 3: Piecewise functions, continuity

Lesson 4: Rate of change, piecewise word problems

Lesson 5: Greatest integer function, power functions

Cumulative review, unit 8

Unit 8 review

Unit 8 test

Unit 9: Polynomial functions

Lesson 1: Polynomial fundamentals, roots, end behavior

Lesson 2. Creating polynomial functions

Lesson 3: Long division (factoring, finding roots)

Lesson 4: Analyzing polynomials with a graphing calculator

Lesson 5: Applications (maximizing volume)

Cumulative review, unit 9

Unit 9 review

Unit 9 test

Semester summary

Semester review

Semester test

Enrichment Topics

Topic A: Analysis of absolute value inequalities

Topic B: Linear Programming

Topic C: Point-slope and intercept forms of a line

Topic D: The summation operator, Σ

Topic E: An unusual look at probability

Topic F: Rotations

Topic G: Absolute value parent functions

Topic H: Dimension changes affecting perimeter, area, and volume

Topic J: Algebraic solution to quadratic systems of equations.

Topic K: Derivation of the sine law

Topic L: Derivation of the cosine law

Topic M: Tangent composite function derivations

Topic N: Locating the vertex of a standard-form parabola

Topic O: Algebraic manipulation of inverse trig functions

Topic P: Logarithm theorem derivations

Topic Q: Arithmetic and geometric sum formulas

Topic R: Converting general form conics into standard form (completing-the-square)