

List of Topics for Math 130 Precalculus.

Rectangular coordinate system, distance and midpoint formulas.

Graphs of equations, circles: completing the square. Symmetry.

Linear equations in two variables: point-slope and slope-intercept forms.

Lines: slope, intercepts, parallel, perpendicular, vertical, horizontal.

Functions: domain, range, notation; the difference quotient.

Graphs of functions, transformations, even and odd functions. Parent functions.

Algebra of functions, composite and inverse functions, notation.

Quadratic functions, completing the square, maximum and minimum values.

Graphs of parabolas. Max-min word problems.

Exponential and logarithmic functions and their graphs, domain, range, and asymptotes; laws of logarithms; change of base; log and exp equations; natural log and exponential functions: base and graphs; exponential growth and decay.

Angle measure: radians, angular speed; trig ratios for acute angles: special values and identities; right-triangle trigonometry; solving right triangles.

Standard position on the unit circle and the trigonometric functions.

Evaluating the trig functions of any special angle—without use of a calculator—from the quadrant of the terminal point and the size of the reference angle.

Graphs of the sine, cosine, and tangent functions: period, amplitude, and phase; inverse trigonometric functions and their graphs.

Trigonometric identities, trigonometric equations and the corresponding graph intersections.

Sum and difference formulas, multiple- and half-angle formulas.

Law of cosines.