

Archdiocese of Philadelphia Secondary School System Pre-Calculus Standards

Content Standard

3.1 Use appropriate technology to organize and analyze data

Competency Standards

- 3.1.1 Identify, collect and analyze data
- 3.1.2 Analyze data given as sets of ordered pairs
- 3.1.3 Produce and interpret scatter plots
- 3.1.4 Calculate lines of best fit

Content Standard

3.2 Understand patterns, relations, and functions

Competency Standards

- 3.2.1 Identify classes of functions in numerical, symbolic and graphical form
- 3.2.2 Identify the six basic trigonometric functions and describe their relationship to periodic behavior
- 3.2.3 Graph transformations of the trigonometric functions
- 3.2.4 Relate the sine and cosine functions to circular motion
- 3.2.5 Identify angle measures in both degree and radian measures
- 3.2.6 Calculate values of the sine and cosine functions as they relate to the unit circle and special right triangles
- 3.2.7 Solve simple trigonometric equations analytically and graphically
- 3.2.8 Solve applications involving inverse trigonometric functions
- 3.2.9 Solve equations involving trigonometric identities
- 3.2.10 Solve applications involving right triangle trigonometry
- 3.2.11 Solve application problems using law of sines and law of cosines
- 3.2.12 Solve application problems for areas of triangles and other geometric figures using trigonometry

Content Standard

3.3 Select, apply, and translate mathematical representations to solve problems

Competency Standards

- 3.3.1 Solve linear equations and inequalities
- 3.3.2 Identify and applies the concepts of direct, inverse and joint variations
- 3.3.3 Solve problems with functions involving two or more variables and linear programming

- 3.3.4 Solve quadratic functions and inequalities
- 3.3.5 Solve higher order functions and inequalities
- 3.3.6 Find real and complex zeros
- 3.3.7 Identify local and absolute maximums and minimums
- 3.3.8 Identify intervals of increasing and decreasing values
- 3.3.9 Solve growth and decay models with integral and rational exponents
- 3.3.10 Set up and solve compound interest models
- 3.3.11 Graph and fits exponential curves
- 3.3.12 Solve problems applying the concepts and laws of logarithms

Content Standard

- 3.4 Apply appropriate techniques, tools, and formulas to determine measurements

Competency Standards

- 3.4.1 Analyze and graphs polar coordinates
- 3.4.2 Find geometric representations of complex numbers
- 3.4.3 Calculate powers and roots of complex numbers
- 3.4.4 Calculate vectors and determinants
- 3.4.5 Solve problems with sequences and series
- 3.4.6 Solve problems with matrices
- 3.4.7 Calculate probabilities for real life events
- 3.4.8 Calculate limits
- 3.4.9 Use sequences and series to estimate areas under a curve
- 3.4.10 Use slopes to calculate rates of change
- 3.4.11 Apply derivatives to curve sketching