Adventist Education

A JOURNEY TO EXCELLENCE

Pre-Calculus

2010

SECONDARY MATHEMATICS STANDARDS
IN SEVENTH-DAY ADVENTIST SCHOOLS

OFFICE OF EDUCATION | North American Division Seventh-day Adventist Church

Mathematics Standards—Pre-Calculus

COURSE FOCUS [Apply the following to each content standard.]

PC.1   Identify SDA Christian principles and values in correlation with mathematics.

    PC.1.1   Recognize God as Creator and Sustainer of an ordered universe.

    PC.1.2   Value God's inspired writings and created works as a revelation of His precision, accuracy, and exactness.

    PC.1.3   Develop accountability as expressed in God's word and laws.

    PC.1.4   Employ Christian principles as a basis for learning and growth.

    PC.1.5   Broaden intellectual abilities through the study of mathematics.

    PC.1.6   Make biblically-based choices when dealing with mathematical data.

    PC.1.7   Apply biblical principles of Christian morality, integrity, and ethical behavior to mathematical processes.

COURSE ABILITIES [Apply the following to each content standard.]

PC.2   Develop abilities in mathematics.

    PC.2.1   Understand mathematical concepts (number sense, algebraic and geometric thinking, measurement, data analysis, and probability).

    PC.2.2   Utilize the problem-solving process (explore, plan, solve, verify).

    PC.2.3   Develop higher thinking skills (analyze, evaluate, reason, classify, predict, generalize, solve, decide, relate, interpret, simplify, model, synthesize).

PC.3   Be able to apply math knowledge and skills to a variety of purposes.

    PC.3.1   Use a variety of strategies in the problem-solving process (patterns, tables, diagrams, etc.).

    PC.3.2   Conduct research (locate, observe/gather, analyze, conclude).

    PC.3.3   Perform calculations with and without technology in life situations.

    PC.3.4   Read critically and communicate proficiently with mathematical vocabulary.

COURSE CONTENT [understand, represent, apply, analyze]

PC.4   Be able to understand concepts of functions.

    PC.4.1   Characterize, classify, and transform functions (even, odd, periodic, piece-wise, continuous, translations, stretches, and compressions).

    PC.4.2   Demonstrate knowledge of limits (definition, properties, finite, infinite).

PC.5   Be able to represent mathematical relationships and situations.

    PC.5.1   Verify trigonometric identities.

    PC.5.2   Write and graph rectangular and parametric equations.

    PC.5.3   Identify, graph, and interpret various functions (polynomial, inverse, trigonometric, logarithmic, exponential, etc.).

    PC.5.4   Present data using statistics and probability (regressions, counting techniques).

    PC.5.5   Illustrate and explore characteristics and operations connecting sequences and series.

PC.6   Be able to apply appropriate techniques, tools, and formulas to interpret and solve problems.

    PC.6.1   Solve systems of equations and inequalities using graphs, algebraic methods, and matrices.

    PC.6.2   Solve higher order equations and inequalities from written and oral expression, recognizing equivalent forms.

    PC.6.3   Solve exponential and logarithmic equations.

    PC.6.4   Perform operations involving polynomials, functions, rational expressions, vectors, and matrices.

    PC.6.5   Decompose fractions into parts.

    PC.6.6   Demonstrate mathematical proficiency using a graphing utility.

PC.7   Be able to analyze results and draw appropriate conclusions.

    PC.7.1   Find and interpret information from graphs, charts, and numerical data.

    PC.7.2   Predict patterns and generalize trends.

    PC.7.3   Analyze and write equations for conic sections.

    PC.7.4   Judge meaning, utility, and reasonableness of findings in a variety of situations, including those carried out by technology.