

CURRICULUM OVERVIEW: PRE-CALCULUS

COURSE DESCRIPTION

Pre-Calculus has three primary goals: review and deepen students' understanding of previously learned mathematics, engage in a thorough study of functions—polynomial, rational, exponential, and logarithmic—and to cover a full course in trigonometry. This class should provide the foundation for students who wish to continue on to calculus for work in engineering, business, or the sciences as well as those whose goals will include non-calculus based quantitative studies.

DAILY/WEEKLY RHYTHM

Each class will open with a greeting from the teacher and a brief prayer. On most days, students will have a brief period to ask questions on the previous day's work. These questions will be fielded by the teacher or by other students in the class. After this review, a new concept or skill will be presented in a short lecture. During the lecture students will be called upon to answer questions, make predictions, or work out problems individually. The remainder of the period will be devoted to guided practice as students begin the new assignment. Homework will be based upon the curriculum author's guidelines for assignment length and pacing in combination with the experience and judgment of the teacher. The problems which are not completed during class time are required to be done outside of class for a homework grade. Occasionally a problem set will require extensive analysis. These assignments will be spread over two or three days of class to allow for discussion and collaboration within the class. There will be a 15-20 minute quiz at least once a week and a 40-50 minute test every 5 – 8 class periods. All tests and quizzes will be cumulative, but quizzes will put more emphasis on the most recent lessons.

CONTRIBUTION TO LEARNING GOALS

This course will revisit many algebraic topics with a renewed emphasis on the underlying logic of problem solving. Special emphasis will be placed on handling equations which can lead to extraneous or missing solutions. This will lead to an investigation of limits, and mathematical processes that involve the infinite and the infinitesimal. Such study should lead to a sense of wonder for God's creation at a deeper level. Students will learn to strategies to solve problems numerically using tables and charts, geometrically by making graphs and diagrams, and analytically using algebraic symbols. These goals will be accomplished primarily through the problem sets. The problem sets will give students practice in applying specific skills, putting skills into combination, and applying skills in variety of contexts in order to solve both abstract and real world problems.

LEARNING OBJECTIVES

Pre-Calculus has a large number of specific learning objectives which are described in detail in the *Pre-Calculus Curriculum Guide*.

ASSESSMENT

The quarter grade will be based on homework, quizzes and tests. The quarter grade will be computed by a weighted average, with homework worth 10%, class participation worth 10%, quizzes worth 30%, and tests worth 50%. The semester grade will be computed by the average of the two end-of-quarter grades.

The rationale for this assessment scheme is based on the work of noted classical Christian consultant and textbook author, John Mays. He recommends the following principles to guide homework and assessment:

- Homework assignments are a necessary learning activity; they are not a valid assessment of whether or not learning has occurred.
- Students must work through many exercises to become proficient at new computational skills. Turning in a paper does not indicate how much a student has learned, nor does it signify that the student has reached the desired level of proficiency.
- The most legitimate assessments of what students have learned about computational tasks are quizzes and tests. Since this is the case, the most legitimate way to form the students grade is with quiz and test grades, not with homework credit.

For more information, please refer to the curriculum guide and to

Putting Homework in its Place, John D. Mays:

http://novarescienceandmath.com/wp-content/uploads/2013/03/Novare_Newsletter_v4_1.pdf

PARENT INVOLVEMENT

Parents are encouraged to check RenWeb frequently to monitor their children's lessons, homework assignments, and grades. In cases where a student is struggling with comprehension or motivation, the teacher will contact the parents by phone or email. The teacher will seek to work together with the parents to find a plan that is best for the specific situation. This may include heightened accountability for assignments, peer tutoring, assistance from the teacher during study hall, and/or additional instruction through on-line videos.