

2010 Science, Technology, Engineering and Mathematics (STEM) Program

Pre-Calculus Syllabus

Pre-Calculus

Program Duration: Six weeks, Class meets fifteen hrs/week, three elective High School credits

Instructor: Prof. Dario Cardenas, Mathematic Department, CCNY

TAs: Mr. Isaiah Yim

Lesson	Objectives
1	Pre-test to gauge students' educational background of subject material. Divide students into <i>Calculus</i> and <i>Pre-Calculus</i> session.
2	Algebra Review Notes Algebra Review Notes document will be provided.
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4	Algebra Review Notes Algebra Review Notes document will be provided.
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6	Section: 1.1, 1.8 Real numbers and the x,y-coordinate plane Study of real numbers, properties of real numbers, and coordinate geometry.
7	Sec: 1.10, 2.2 Graph of lines and functions Graph of lines and functions.
8	Section: 1.7 Inequalities Study of inequalities.
9	Section: 3.1 Graphs of polynomials Study how to graph polynomials.
10	Review of the previous sections.
11	Exam # 1 (one hour) Review exam and make sure students understand the material (theory and applications).
12	Section: 6.1, 6.2 Trigonometry. Angle measure and Right Triangle Trigonometric Study of angle measure and trigonometry of right triangles.
13	Section: 6.3 Trigonometric functions of angles Study of trigonometric functions of angles.
14.	Section: 2.4 Transformations of functions Trigonometric functions of angles (continuation) and transformations of functions.
15	Section: 5.3 Trigonometric Graphs Graph of trigonometric functions.
16	Section: 5.4, 7.1 Trigonometric Graphs and Elementary trigonometric identities More trigonometric graphs, and study of elementary trigonometric identities.
17	Section: 7.2, 7.3 Sum, difference, double and half angle formulas

- Study of addition, subtraction, double-angle, and half-angle formulas.
- 18 **Section: 2.8 Inverse Functions**
Study of inverse functions.
- 19 **Section: 7.4, 7.5 Inverse Trigonometric Functions and Trigonometric equations**
Study of inverse trigonometric functions, and solve trigonometric equations.
- 20 Review about trigonometric functions of angles, right triangle trigonometric, inverse functions, and inverse trigonometric functions.
- 21 **Exam # 2** (one hour)
Review the exam and make sure students understand the material (theory and applications).
- 22 **Section: 2.3, 2.5 Average rate of change, Quadratic Functions**
Study average rate of change, quadratic functions, maxima and minima.
- 23 **Section: 2.6, 2.7 Modeling with Functions, Combining Functions**
Find models that can be constructed using geometric or algebraic properties. Study different ways to combine functions to make new functions.
- 24 **Section: 4.1, 4.5 Exponential Functions, Exponential Growth**
Study exponential functions and graphs, and exponential models.
- 25 **Section: 4.2, 4.5 Logarithmic Functions, Laws of Logarithms**
Study the inverse of exponential functions and the properties of logarithms.
- 26 Review about average rate of change, quadratic functions, exponential functions, and logarithmic functions.
- 27 **Exam # 3** (one hour)
Review the exam and make sure students understand the material (theory and applications).
- 28 **Final Review**
- 29 **Final Review**
- 30 **Final Exam** (2 hours).
Solve in detail final exam and make sure students understand the material (theory and applications).

TEXT *PRECALCULUS* by Stewart Redlin and Watson, 5th Ed (Book Code ISBN 0-53449277-0).

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Grade computation:

Your class average is determined by:

<i>Homework:</i>	5%
<i>Quizzes :</i>	20%
<i>In-class exams (3):</i>	35%
<i>Final Exam:</i>	40%