

BRONX COMMUNITY COLLEGE
of the City University of New York
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

SYLLABUS: MTH 30 - Precalculus (4 Credits - 4 Hours per week)

Prerequisite: MTH 6 or equivalent, and if required ENG 2 and RDL 2

TEXT: Precalculus (Fourth Edition) by Robert Blitzer, Pearson

ISBN 978-0-321-72956-9

This course is a **Pathways Core B (Mathematical and Quantitative Reasoning) Course:**

A course in this area must meet all of the following learning outcomes. A student will:

- a) Interpret and draw appropriate inferences from quantitative representations, such as formulas, graphs, or tables.
- b) Use algebraic, numerical, graphical, or statistical methods to draw accurate conclusions and solve mathematical problems.
- c) Represent quantitative problems expressed in natural language in a suitable mathematical format.
- d) Effectively communicate quantitative analysis or solutions to mathematical problems in written or oral form.
- e) Evaluate solutions to problems for reasonableness using a variety of means, including informed estimation.
- f) Apply mathematical methods to problems in other fields of study.

Course Learning Outcomes

(Pathways Learning Outcomes contributed to)

On successful completion of this course a student will be able to:

1. Solve factorable polynomials equations and inequalities of at least 3rd degree in one real variable and 2nd degree rational equations and inequalities in one real variable (b, c, e)
2. Graph polynomial, rational, exponential, logarithmic, sine and cosine functions (b, d, e, f)
3. Verify trigonometric identities and solve trigonometric equations (b, d)
4. Employ transformations of functions algebraically and graphically as problem-solving tools (b, c)
5. Compute inverse functions and use their properties to obtain more precise algebraic and graphical information about the corresponding original functions (a, b, c)
6. Demonstrate fluency with function notation and operations on functions including composition (b, c)
7. Identify whether a given graph or algebraic relation represents a function and analyze it to determine its particular properties such as domain and range, end behavior, asymptotes, and periodicity (a, c, d)
8. Form models to apply them in the solution of real-world problems such as involving exponential growth and decay and optimization in finance, biology, chemistry, or physics (a, b, c, d, e, f)

<u>SECTION</u>	<u>TOPIC</u>	<u>SUGGESTED EXERCISES</u>
Functions and Graphs		
1.2	Basics of Functions and their Graphs	168/ 11-31 (odd), 45, 47, 53-57, 71, 72, 75, 76
1.3	More on Functions and their Graphs	182/ 11, 15, 17, 23, 69-76, 81
1.6	Transformations of Functions	227/ 1-87 (odd)
1.7	Combinations of Functions; Composite Functions	242/ 5-11, 17-33, 51-59, 83-90
1.8	Inverse Functions	254/ 1-5, 11-25, 29-37

<u>SECTION</u>	<u>TOPIC</u>	<u>SUGGESTED EXERCISES</u>
Polynomial and Rational Functions		
2.2	Quadratic Functions	313/ 9-55 (odd)
2.3	Polynomial Functions and Their Graphs	330/ 3-7, 15-21, 25, 27-33, 37, 39, 41-47
2.4	Dividing Polynomials; Remainder and Factor Theorems	343/ 13, 15, 17-25, 33-41
2.5	Zeroes of Polynomial Functions	356/ 1-16, 17-31 (odd)
2.6	Rational Functions and Their Graphs	377/ 1-7, 9-14, 21-28, 37-43, 45, 49, 57, 63, 71
2.7	Polynomial and Rational Inequalities	391/ 1-23 (odd), 43-45, 55-57, 69, 70
Exponential and Logarithmic Functions		
3.1	Exponential Functions	423/ 11-17, 19-24, 25-31, 35-37, 41, 43
3.2	Logarithmic Functions	437/ 1-29, 43, 44, 47-53, 55, 59, 63, 71, 75-79, 81-89
3.3	Properties of Logarithms	449/ 1-27, 35, 37, 41-57, 67, 71-77
3.4	Exponential and Logarithmic Equations	461/ 1-21, 27-43, 49-57, 69-71, 87, 89
Trigonometric Functions		
4.1	Angles and Radian Measure	505/ 1-10, 13-28, 41-56, 60-63
4.2	Trigonometric Functions: The Unit Circle	520/ 1-55
4.3	Right Triangle Trigonometry	533/ 3-15, 21-31
4.4	Trigonometric Functions of Any Angle	548/ 1-21, 23-27, 35-43, 61-73
4.5	Graphs of Sine and Cosine Functions	568/ 1-25 (odd), 43-49
4.7	Inverse Trigonometric Functions	598/ 1-11, 19-41, 47-53, 63-67
Analytic Trigonometry		
5.1	Verifying Trigonometric Identities	630/ 1-35
5.2	Sum and Difference Formulas	640/ 1, 3, 5, 13, 15, 21, 23, 33, 35
5.5	Trigonometric Equations	674/ 11, 15, 19, 25, 39, 41, 5

8/06 (MM)

12/06 (AW)

01/16 (EA) for new edition

10/17 (EA) for Pathways compliance