

50:640:113 – PreCalculus for Business, Economics, and Life Sciences

Prerequisite:

50:640:042 or appropriate score on the Mathematics Placement Examination. Credit will not be given for both this course and 50:640:115 (Precalculus College Math). This is a preparatory course for those students who must take 50:640:130 Calculus for Business, Economics, and Life Sciences.

Students who plan to take more than one term of calculus should follow the unified sequence 50:640:121-122 & 221, i.e. this is not the course for you.

Overview & Objective:

A study of real numbers with regard to algebraic operations and order properties. Introduction to complex numbers, and logarithmic and exponential functions.

Textbook:

Precalculus Applied, 4th Edition by James Stewart, Lothar Redlin, and Saleem Watson

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Course Topics

P. PREREQUISITES.

- P2. The Real Numbers.
- P3. Integer Exponents and Scientific Notation.
- P4. Rational Exponents and Radicals.
- P5. Algebraic Expressions.
- P6. Factoring.
- P7. Rational Expressions.
- P8. Solving Basic Equations.
- P9. Modeling with Equations.

1. EQUATIONS AND GRAPHS.

- 1.1 The Coordinate Plane.
- 1.2 Graphs of Equations in Two Variables; Circles.
- 1.3 Lines.
- 1.4 Solving Quadratic Equations.
- 1.5 Complex Numbers.
- 1.6 Solving Other Types of Equations.
- 1.7 Solving Inequalities.
- 1.8 Solving Absolute Value Equations and Inequalities.
- 1.9 Solving Equations and Inequalities Graphically.
- 1.10 Modeling Variations.

2. FUNCTIONS.

- 2.1 Functions.
- 2.2 Graphs of Functions.

- 2.3 Getting Information from the Graph of a Function.
- 2.4 Average Rate of Change of a Function.
- 2.5 Linear Functions and Models.
- 2.6 Transformations of Functions.
- 2.7 Combining Functions.
- 2.8 One-to-One Functions and Their Inverses.

3. POLYNOMIAL AND RATIONAL FUNCTIONS.

- 3.1. Quadratic Functions and Models.
- 3.2 Polynomial Functions and Their Graphs.
- 3.3 Dividing Polynomials.
- 3.4 Real Zeros of Polynomials.
- 3.5 Complex Zeros and the Fundamental Theorem of Algebra.
- 3.6 Rational Functions.
- 3.7 Polynomial and Rational Inequalities.
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4. EXPONENTIAL AND LOGARITHMIC FUNCTIONS.

- 4.1 Exponential Functions.
- 4.2 The Natural Exponential Function.
- 4.3 Logarithmic Functions.
- 4.4 Laws of Logarithms.
- 4.5 Exponential and Logarithmic Equations.

Typical Course Pacing and Homework

Lecture	Section	Homework
1	The Real Numbers. Integer Exponents and Scientific Notation. Rational Exponents and Radicals. Algebraic Expressions.	Pg 76 # 3, 5, 11, 13, 25, 39, 45, 47
2	Factoring. Rational Expressions. Solving Basic Equations.	Pg 76 # 51-67 odd, 69, 75, 89, 91, 103, 107, 111, 115
3	The Coordinate Plane. Graphs of Equations in Two Variables; Circles.	Pg92 # 7, 9, 13, 25, 35 Pg 102 # 19, 23, 33, 49, 55, 67, 69, 73, 77
4	Lines.	Pg 112 # 9, 23, 25, 29, 35, 37, 43, 47, 53, 61, 63, 65, 67
5	Solving Quadratic Equations.	Pg 123 # 7, 17, 25, 35, 37, 41, 57, 59, 61
6	Solving Other Types of Equations. Solving Inequalities	Pg 138 #5, 21, 27, 43, 57, 59 Pg 148 #19, 27, 37, 39, 51, 59
7	Solving Absolute Value Equations and Inequalities.	Pg153 #13, 17, 27, 31
8	Functions.	Pg 192 # 11, 15, 19, 21, 31, 43, 51, 55, 59, 69, 73
9	Graphs of Functions. Getting Information from the Graph of a Function.	Pg 203 # 9, 15, 19, 23, 35, 57, 61 Pg 214 # 7, 21, 23, 27, 35, 41
10	Transformations of Functions	Pg 242 #29-47 odd
11	Combining Functions	Pg 252 # 9, 21, 27, 49, 55, 59, 63
12	One-to-One Functions and Their Inverses.	Pg 262 # 13, 15, 17, 25, 29, 31, 39, 49, 55, 61, 73
13	Review Test 1	
14	Test 1	
15	Quadratic Functions and Models	Pg 268 # 15, 27, 29, 35, 37
16	Polynomial Functions and Their Graphs.	Pg 302 # 5, 11, 17, 29, 31, 33, 35, 37, 45, 65, 67
17	Dividing Polynomials.	Pg 310 #9, 19, 3, 39, 53, 57, 63, 67
18	Real Zeros of Polynomials	Pg 319 # 15, 29, 45, 55, 63, 69, 73, 81
19	Rational Functions.	Pg 344 #9, 13, 15, 17, 21, 27
20	Rational Functions.	Pg 344 # 31, 33, 35, 45, 53, 55, 59, 63, 69
21	Polynomial and Rational Inequalities.	Pg 352 # 7, 13, 23, 27
22	Test 2	
23	Exponential Functions. The Natural Exponential Function	Pg 372 #7, 17, 21, 27, 29, 31 Pg 377 #3, 5, 7, 33
24	Logarithmic Functions.	Pg 387 # 7, 9, 11, 25, 31, 47, 49, 51, 61, 63, 67, 73
25	Laws of Logarithms	Pg 394 # 9, 11, 13, 23, 31, 37, 51, 53, 59, 61, 67
26	Exponential and Logarithmic Equations.	Pg 404 # 3, 5, 7, 15, 17, 21, 39, 45, 49, 55, 59, 61, 63, 69
27	Test 3	
28	Final Exam Review	