

**University of Houston  
Mathematics Department  
MATH 2303 - Concepts in Algebra**

**Syllabus**

**Prerequisites:** Math 1312 or Math 1313

**Text:** A Survey of Mathematics with Applications, 7<sup>th</sup> edition, Angel, Abbott, & Runde, Pearson/Addison Wesley

**Chapter 4:** Systems of Numeration

- 4.1 Additive, Multiplicative, and Ciphered Systems of Numeration
- 4.2 Place-Value or Positional-Value Numeration Systems
- 4.3 Other Bases
- 4.4 Computation in Other Bases

**Chapter 5:** Number Theory and the Real Number System

- 5.1 Number Theory
- 5.2 The Integers
- 5.3 The Rational Numbers
- 5.4 The Irrational Numbers and the Real Number System
- 5.5 Real Numbers and Their Properties

**Chapter 6:** Algebra, Graphs, and Functions

- 6.1 Order of Operations
- 6.2 Linear Equations in One Variable
- 6.3 Formulas
- 6.4 Applications of Linear Equations in One Variable
- 6.7 Graphing Linear Equations

**Chapter 8:** The Metric System

- 8.1 Basic Terms and Conversions within the Metric System
- 8.2 Length, Area, and Volume
- 8.3 Mass and Temperature
- 8.4 Dimensional Analysis and Conversions

## Chapter 10: Mathematical Systems

- 10.1 Groups
- 10.2 Finite Mathematical Systems
- 10.3 Modular Arithmetic

## Chapter 11: Consumer Mathematics

- 11.1 Percent
- 11.2 Personal Loans and Simple Interest
- 11.3 Compound Interest
- 11.4 Installment Buying
- 11.5 Buying a House with a Mortgage

### Suggested Problem List

Note that a calculator with an exponentiation key and a natural logarithm key is needed for the material in Chapter 11.

## Chapter 4

- 4.1: 12, 18, 26, 39, 46, 52, 59, 67, 69, 71- 73, 76  $\text{D}$  79
- 4.2: 18, 26, 29, 31, 39, 40, 44, 49, 50, 50 - 54
- 4.3: 8, 9, 12, 24, 29, 31, 38, 41, 48, 55, 56
- 4.4: 10, 15, 21, 30, 35, 38, 43, 46, 53
- Review: 2, 3, 8, 9, 14, 15, 20, 21, 26, 31, 37, 44, 52, 56, 62, 69, 74, 79

## Chapter 5

- 5.1: 7, 8, 16, 18, 19, 21, 23, 24, 26, 28, 32, 34, 38, 42, 49, 50, 57, 58, 61
- 5.2: 47 — 56, 72, 75
- 5.3: 4, 5, 10a, 14, 24, 34, 40, 50, 52, 59, 60, 64, 77, 84, 86, 91, 97, 100
- 5.4: 1, 4, 7, 12, 16, 25, 31, 32, 33, 40, 44, 54, 57, 65, 66, 73, 80, 82, 85 - 99
- 5.5: 3, 6, 7, 9, 10, 12, 14, 15, 21, 22, 32, 36, 40, 67, 68, 70, 74, 78, 86
- Review: 12, 20, 29, 30, 35, 46, 63, 64, 76 80, 91  $\text{D}$  96

## Chapter 6

- 6.1: 3, 4, 7, 8, 12, 14, 21, 26, 28, 32, 36, 40, 43
- 6.2: 5, 10, 12, 13, 32, 35, 38, 42, 43, 46, 48, 58, 60, 66, 70  $\text{D}$  72

6.3: 4, 12, 13, 14, 21, 22, 23, 26, 30, 38, 46, 58, 61, 67, 70, 72

6.4: 1, 7, 11, 14, 19, 20, 23, 24, 25, 26, 28, 30, 31, 32, 38, 43

6.7: 5, 8, 34, 41, 43, 52, 62, 68, 72, 84, 90, 97, 99

Review: 5, 9, 12, 14, 15, 19, 27, 28, 34, 36, 40, 65, 70, 78, 81

## Chapter 8

8.1: 3, 6, 7, 8, 10, 11  $\text{D}$  14, 24, 32, 36, 40, 46, 55, 60, 64, 66, 68, 71, 75

8.2: 13, 20, 24, 26, 31, 36, 39, 42, 46, 72, 93, 98, 108, 111

8.3: 4, 13, 14, 19, 21, 29, 32, 35, 59, 66

8.4: 1, 2, 6, 14, 22, 37, 39, 47, 50, 52, 58, 63

Review: 4, 8, 14, 18  $\text{D}$  20, 27, 31, 49, 52, 60, 61

## Chapter 10

10.1: 2, 3, 4, 5, 9, 10, 15, 17, 23  $\text{D}$  38

10.2: 4, 6, 8, 10, 12, 18, 20, 23, 26, 32, 36, 45, 46, 51, 54, 57, 62, 65, 66, 67, 72, 77, 79

10.3: 2, 3, 8, 11, 16, 22, 25, 27, 30, 31, 32, 36, 39, 44, 45, 50, 54, 55, 58, 61, 65

Review: 1  $\text{D}$  4, 7, 10, 11  $\text{D}$  16, 18, 20, 26, 34, 39, 41  $\text{D}$  43

## Chapter 11

11.1: 5, 6, 8, 12, 16, 20, 25, 28, 31, 32, 40, 49, 51, 56

11.2: 7, 10, 14, 18, 19, 22, 26, 28, 30, 32, 34, 40, 51

11.3: 5, 8, 13, 18, 20, 24, 27, 30, 33, 35, 41

11.4: 3, 6, 10, 12, 14, 17, 23, 28, 35

11.5: 3, 7, 9, 12, 16, 19, 22, 25

Review: 14, 18, 26, 30, 33, 40