Math 1200 College Algebra

Fall 2017

- Learning Objectives
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- Exams & Solutions

Short-term illness Policy

“If you experience flu symptoms such as fever, a cough, sore throat, body aches, headache, chills or fatigue, please don't come to class. If your symptoms persist, please ask your parents to take you home or to seek assistance from Student Health Services so that you can be cared for in a setting that does not put others at risk.”

Please notify me through email (singhp@ohio.edu) so that attendance as well as grading policy may be adjusted.
Learning Objectives

Develop mathematical thinking and communication skills; increase quantitative and logical reasoning abilities needed for informed citizenship and in the workplace; strengthen quantitative and mathematical abilities that will be useful in the study of other disciplines.

Chapter R. Review of Prerequisites
Sets and the Real Number Line; Models, Algebraic Expressions, and Properties of Real Numbers; Integer Exponents and Scientific Notation; Rational Exponents and Radicals; Polynomials and Multiplication of Radicals; Problem Recognition Exercises: Simplifying Algebraic Expressions; Factoring; Rational Expressions and More Operations on Radicals

Chapter 1. Equations and Inequalities (12)
Linear Equations and Rational Equations; Applications and Modeling with Linear Equations; Complex Numbers; Quadratic Equations; Problem Recognition Exercises: Simplifying Expressions Versus Solving Equations; Applications of Quadratic Equations; More Equations and Applications; Linear Inequalities and Compound Inequalities; Absolute Value Equations and Inequalities; Problem Recognition Exercises: Recognizing and Solving Equations and Inequalities

Chapter 2. Functions and Graphs (14)
The Rectangular Coordinate System and Graphing Utilities; Circles; Functions and Relations; Linear Equations in Two Variables and Linear Functions; Applications of Linear Equations and Modeling; Problem Recognition Exercises: Comparing Graphs of Equations; Transformations of Graphs; Analyzing Graphs of Functions and Piecewise-Defined Functions; Algebra of Functions and Function Composition

Chapter 3. Polynomials and Rational Functions (12)
Quadratic Functions and Applications; Introduction to Polynomial Functions; Division of Polynomials and the Remainder and Factor Theorems; Zeros of Polynomials; Rational Functions; Problem Recognition Exercises: Polynomial and Rational Functions; Polynomial and Rational Inequalities; Problem Recognition Exercises: Solving Equations and Inequalities; Variation

Chapter 4. Exponential and Logarithmic Functions (8)
Inverse Functions; Exponential Functions; Logarithmic Functions; Problem Recognition Exercises; Analyzing Functions; Properties of Logarithms; Exponential and Logarithmic Equations; Modeling with Exponential and Logarithmic Functions

**Chapter 5. Systems of Equations and Inequalities (2)**

Systems of Linear Equations in Two Variables and Applications

**Topics**

**Chapter R. Review of Prerequisites**

- **R.1** Sets and the Real Number Line 2
- **R.2** Models, Algebraic Expressions, and Properties of Real Numbers 17
- **R.3** Integer Exponents and Scientific Notation 27
- **R.4** Rational Exponents and Radicals 39
- **R.5** Polynomials and Multiplication of Radicals 53
- Problem Recognition Exercises: Simplifying Algebraic Expressions 64
- **R.6** Factoring 65
- **R.7** Rational Expressions and More Operations on Radicals 76

**Chapter 1. Equations and Inequalities**

- Linear Equations and Rational Equations 100
- Applications and Modeling with Linear Equations 113
- Complex Numbers 125
- Quadratic Equations 135
- Problem Recognition Exercises: Simplifying Expressions Versus Solving Equations 148
- Applications of Quadratic Equations 148
- More Equations and Applications 158
- Linear Inequalities and Compound Inequalities 169
- Absolute Value Equations and Inequalities 179
• Problem Recognition Exercises: Recognizing and Solving Equations and Inequalities 187

Chapter 2. Functions and Graphs
• 2.1 The Rectangular Coordinate System and Graphing Utilities 196
• 2.2 Circles 208
• 2.3 Functions and Relations 214
• 2.4 Linear Equations in Two Variables and Linear Functions 228
• 2.5 Applications of Linear Equations and Modeling 244
• Problem Recognition Exercises: Comparing Graphs of Equations 261
• 2.6 Transformations of Graphs 262
• 2.7 Analyzing Graphs of Functions and Piecewise-Defined Functions 275
• 2.8 Algebra of Functions and Function Composition 295

Chapter 3. Polynomials and Rational Functions
• 3.1 Quadratic Functions and Applications 320
• 3.2 Introduction to Polynomial Functions 333
• 3.3 Division of Polynomials and the Remainder and Factor Theorems 348
• 3.4 Zeros of Polynomials 361
• 3.5 Rational Functions 377
• Problem Recognition Exercises: Polynomial and Rational Functions 398–399
• 3.6 Polynomial and Rational Inequalities 399
• Problem Recognition Exercises: Solving Equations and Inequalities 412
• 3.7 Variation 413

Chapter 4. Exponential and Logarithmic Functions
• 4.1 Inverse Functions 432
• 4.2 Exponential Functions 444
• 4.3 Logarithmic Functions 458
- Problem Recognition Exercises: Analyzing Functions 473
- **4.4** Properties of Logarithms 474
- **4.5** Exponential and Logarithmic Equations 483
- **4.6** Modeling with Exponential and Logarithmic Functions 497

**Chapter 5. Systems of Equations and Inequalities**

- **5.1** Systems of Linear Equations in Two Variables and Applications 522

**Syllabus & Tentative Schedule**

**Prerequisites:** PL1 or C or T or better in Math D004 Intermediate Algebra with Pre-Algebra or D005 Intermediate Algebra.

**Textbook (Required):** College Algebra Essentials by Julie Miller McGraw-Hill, **ISBN: 978-1259-1684 37/33**, specially packaged for Ohio University students, comes in a shrink wrap with an access code to use Connectmath (electronic homework system). Connect Math **class access code** to be used in conjunction with the access code which is prepackaged with the book. **In case you have financial difficulty,** your teacher will provide you the free class access code (valid only for the first 2-3 weeks).

**Material Covered:** The purpose of Math 1200 is to refresh college algebra skills required to move on to Calculus, Statistics, and Psychology.

**Learning Objectives:** Develop mathematical thinking and communication skills; increase quantitative and logical reasoning abilities needed for informed citizenship and in the workplace; strengthen quantitative and mathematical abilities that will be useful in the study of other disciplines.

**Attendance/Class Participation:** Attendance on a regular basis is vital to your success in the course. The work done in class will help you succeed in the course and earn a better grade. Homework may be collected and quizzes given at the discretion of the instructor. Attendance and participation in class will improve your understanding of the material. **Please note that calculators or cell phones are not to be used during class/exam.**

**Grade Scheme: Weights:**

Top 3 hourly exams (out of 4) 100 points each = 300 points
Quizzes, groupwork, written homework, attendance 40 points = 40 points

Online Connect Math Homework 60 points = 60 points

Final exam 150 points = 150 points

**Total points** 550 points

**Grading Scale:**

- A 90 and above
- A- 85-89.9
- B+ 80-84.9
- B 75-79.9
- B- 70-74.9
- C+ 65-69.9
- C 60-64.9
- C- 55-59.9
- D+ 50-54.9
- D 45-49.9
- D- 40-49.9
- F Below 40

**Makeup exams are not allowed unless there is an extenuating circumstance.** Keeping this policy in mind, only the three hourly exams (out of 4) along with the quizzes, homework, and the final exam will be used to determine your grade according to the grade scheme and grade scale given above. Students missing an exam due to a university excused absence (e.g., student athletes) will be offered make-up exam(s); **documentation must be provided** to show that the exam was missed due to a university excused absence.

**Final exam COMBINED-SECTION EXAMINATION** Monday, December 11, at 2:30 pm. *Final exam room (will be announced later) may or may not be the same as your classroom.*
Help Sessions: SI sessions as well as math tutoring will be provided free of cost on certain evenings as well as during the day. These sessions will be announced soon. For more info, visit Tutoring Services or go to Alden 101.

Academic Misconduct: Proper classroom decorum should be observed. Failure to do so will result in removal from the class. Any cheating on exams will result in failure in the class and be reported to the Office of Community Standards and Student Responsibility, which may impose additional sanctions. You may appeal any sanctions through the grade appeal process. For more details, visit the university's Community Standards page.

Special Needs: If you have specific physical, psychiatric, or learning disabilities and require accommodations, please let me know as soon as possible so that your learning needs may be appropriately met. Don’t forget to register with the Office of Student Accessibility Services to obtain written documentation and to learn about the resources they have available.

Tentative Weekly Schedule

Classes Begin: August 28, Monday; No classes: September 4 (Labor Day), Oct. 10 (Reading Day) and November 10 (Veterans Day), and November 22–24 (Thanksgiving Break)

Exam 1: September 15 (R1-1.1);
Exam 2: October 13 (1.2-2.3);
Exam 3: Exam 3: November 3 (2.4-3.2);
Exam 4: Exam 4: December 1 (3.3-4.3)

Final Exam (cumulative: R1-5.1): Monday, December 11, 2:30 pm

- Week (of Aug. 28) 1: R1 - R2, R3 - R4; HW due Sept. 2
- Week (of Sept. 4) 2: R4 - R6, Group Work/Written Homework, mini evaluations; HW due Sept. 9
- Week (of Sept. 11) 3: R7, 1.1, review Exam 1: Sept. 15 (R1-1.1); HW due Sept. 16
- Week (of Sept. 18) 4: Go over exam 1, 1.2, 1.3, HW due Sept. 23
• Week (of Sept. 25) 5: 1.4, 1.5, 1.6, Group Work/Written Homework, HW due Sept. 30
• Week (of Oct. 2) 6: 1.7, 1.8, 2.1, HW due Oct. 7
• Week (of Oct. 9) 7: Reading Day, Oct. 10 (no class), 2.2, 2.3, and review, Exam 2: October 13 (1.2 - 2.3); HW due Oct. 14
• Week (of Oct. 16) 8: Go over exam 2, 2.4, 2.5, 2.6, HW due Oct. 21
• Week (of Oct. 23) 9: 2.6, 2.7, 2.8, Group Work/Written Homework; HW due Oct. 28
• Week (of Oct. 30) 10: 3.1, 3.2, 3.3, and review, Exam 3: Nov. 3 (2.4 – 3.2); HW due Nov. 4
• Week (of Nov. 6) 11: Go over exam, 3.3, 3.5, 3.6; HW due Nov. 11
• Week (of Nov. 13) 12: Nov. 10 (Veterans Day Holiday), Group Work/Written Homework, 3.6, 3.7, 4.1; HW due Nov. 18
• Week (of Nov. 20) 13: 4.2, 4.3; Thanksgiving Break (November 22 – 24); HW due Nov. 25
• Week (of Nov. 27) 14: 4.3, 4.4, review, Exam 4: Dec. 1 (3. 3 – 4.3); and HW due Dec. 2
• Week (of Dec. 4) 15: Go over exam 4, 4.5, 4.6, 5.1 and applications and review for final exam (cumulative); HW due Dec. 9
• Final Exam: Monday, December 11, at 2:30 p.m. (rooms will be announced later).

Homework Using Connectmath

To do your homework you need to have class access code for your section (see below) and the access code which comes with your book (in a shrink wrap). These two codes will enable you to log on to www.connectmath.com to do your homework.

Section # & Class Access Code

• 100 AT4F6-HHKJU
• 101 LRHAQ-HRDJK
• 102 NK3WD-6CJMN
103 X4DKT-RRMAJ
104 FEYXT-YW996
105 VEQTG-3DCT4
106 NMGXX-FYQHV
107 FV6A9-TYMWE
108 PYFFN-UGLCH
109 DGRME-XVJQW
110 GJLPP-AKFUD
111 YWPVD-3F3EU
112 VL3D3-LWRTJ
113 XTH3R-AVYAA
115 6PLXC-PDEA9
114 PFKP6-XPXAL
116 YVK4K-96TTF
117 49KTK-3JP36
118 PHLPF-9QUDV
119 ATYFY-M6LMN
120 WFHMH-UP3UC
121 FDXLL-X6VGQ
122 MTNL6-96M3U
123 MXQAL-RDKAX
124 KLK3N-NAEP4
125 TVWHV-PMGGU
126 KM3Y6-K4T9E
127 EME9H-ALFX6

Exams & Solutions
- Exam 1A: Questions
- Exam 1A: Solutions

**Previous Exams**

**Spring 2014**
- Exam 1: Solutions
- Exam 2: Solutions
- Exam 3: Solutions
- Exam 4: Solutions

**Fall 2014**
- Exam 1: Solutions
- Exam 2: Solutions
- Exam 3: Solutions
- Exam 4: Solutions

**Spring 2015**
- Exam 1: Solutions
- Exam 2: Solutions
- Exam 3: Solutions
- Exam 4: Solutions

**Fall 2015**
- Exam 1A: Questions
- Exam 1A: Solutions
- Exam 2A & 2B: Questions
- Exam 2B: Solutions
- Exam 3A: Questions
• Exam 3A: Solutions
• Exam 4: Questions
• Exam 4: Solutions

Spring 2016
• Exam 1A: Questions
• Exam 1A: Solutions
• Exam 2A: Questions
• Exam 2A: Solutions
• Exam 3A: Questions
• Exam 3A: Solutions
• Exam 4A: Questions
• Exam 4A: Solutions

Fall 2016
• Exam 1A: Questions
• Exam 1A: Solutions
• Exam 2: Questions
• Exam 2: Solutions
• Exam 3: Questions
• Exam 3: Solutions
• Exam 4: Questions
• Exam 4: Solutions

Spring 2017
• Exam 1A: Questions
• Exam 1A: Solutions
- Exam 2B: Questions
- Exam 2B: Solutions
- Exam 3A: Questions
- Exam 3A: Solutions
- Exam 4A: Questions
- Exam 4A: Solutions

**Fall 2017**

- Exam 2A: Questions
- Exam 2A: Solutions
- Exam 3A: Questions
- Exam 3A: Solutions