

COLLEGE ALGEBRA HOMEWORK

- This homework is based on: M. Dugopolski (2010): "College Algebra", 5th edition
- It is crucial to do the homework as part of your preparation for the exams. To keep up, I recommend that **after every lecture you should solve the homework problems corresponding to the material covered on that day's lecture.** Do the assigned reading and problems in the specified order.
- CA1, CA2, CA3, CA4 refer to the problems given in the online lecture notes. These notes are available at the course website.

Review of Sets

- **Review of Sets**
Read §P.1 (the real numbers)
CA1: 1,2,3,4

Equations

- **Properties of Equality**
 - **Equations – Definitions**
 - **Linear Equations**
Read §1.1
§1.1: 13-34
CA2: 1
 - **Quadratic Equations**
Read §1.6
§1.6: 5-28, 45-60
CA2: 2,3
 - **Polynomial equations**
Read §3.4 (examples 1, 2)
CA2: 4
§3.4: 1-10
CA2: 5
 - **Binomial/Trinomial equations**
Read §3.4 (examples 6,7)
§3.4: 35-38, 41-42,45,46
CA2: 6,7,8,9
 - **Rational equations**
Read §1.1 (example 3)
§1.1: 37-48
CA2: 10
 - **Parametric linear equations**
CA2: 11, 12
- Exam 1**

Inequalities

- **Properties of Inequality**
Read §1.7 (interval notation)
§1.7: 7-14, 35-44

- **Linear Inequalities**
Read §1.7 (examples 1,2,3)
§1.7: 15-26
CA2: 13
- **Quadratic Inequalities**
Read §3.1 (example 6)
Read "Review of Sign charts"
§3.1: 53-58, 65-88 (use sign chart method)
CA2: 14
- **Polynomial inequalities**
Read lecture notes
Read §3.5 (example 5) but note that the "sign charts method" is easier and more powerful than the "test point method"
§3.5: 85-96
CA2: 15, 16
- **Rational inequalities**
Read §3.6 (example 8)
§3.6: 95-114 (use sign charts)
CA2: 17, 18
- **Systems of inequalities**
Read §1.7 (examples 5.6)
§1.7: 47-58
CA2: 20
- **Equations and Inequalities with absolute values**
Read §1.1 (example 5)
CA2: 23, 24 (optional)
- *equations*
§1.1: 63-80
CA2: 25, 26
CA2: 27 (optional)
- *inequalities*
Read §1.7 (example 7)
§1.7: 59-76
CA2: 28,29
CA2: 30 (optional)
- **Parametric quadratic equations**

Read lecture notes

§1.6: 99-104

CA2: 19

- **Equations with Radicals**

Read §3.4 (examples 3,4)

§3.4: 11, 17, 19-26

CA2: 21, 22ab

CA2: 22cde (optional)

Exam 2

Systems of Equations

- **2x2 linear systems**

Read §5.1 (optional)

Read §6.5 (examples 1-3)

§6.5: 17-26, 31,32,35,36

CA3: 1, 2

- **3x3 linear systems**

Read §5.2 (optional)

Read §6.6 (examples 1-6)

§5.2: 11-16

CA3: 3

- **Nonlinear systems**

Read §5.3

Linear+Quadratic systems

§5.3: 5-8,19,20

CA3: 4

The Fundamental system

§5.3: 21, 22

CA3: 5

Symmetric systems

§5.3: 30

CA3: 6, 7, 8

Homogeneous systems

§5.3: 31, 32

CA3: 9

Exam 3

Functions

- **Preliminary concepts**

Read §2.1

§2.1: 23-30, 43, 44

CA4: 1,2,3

- **Functions – basic concepts**

§2.1: 31-36

CA4: 4,5

- **Algebra with functions**

Read §2.4 (examples 1,2,3)

§2.4: 15-22, 23-30

CA4: 6,8

CA4: 7,9 (for fun)

- **Odd and even functions**

Read §2.3 (symmetry – example 8)

§2.3: 61-80

CA4: 10, 11, 12

- **Function Composition**

Read §2.4 (examples 4,5,6,7)

§2.4: 51-58

CA4: 13, 14, 15, 16, 17

- **Functions and monotonicity**

Read §2.2 (example 10)

§2.2: 57, 58,63, 64

CA4: 18-22

- **Inverse Functions**

Read §2.5

definition of one-to-one functions

§2.5: 27-34, 17-24

CA4: 23,24,25

calculation of inverse function

§2.5: 67-76

CA4: 26

- **Functions – Calculating the range**

Read §2.2

Read lecture notes, study examples

§2.3: 45-60 (do them by algebra)

CA4: 31

CA4: 32 (optional)

Graphing Functions

- **Coordinate system**

Read §1.3 (examples 1-3)

§1.3: 23-26, 29-32

CA5: 1-4

- **Lines**

Read §1.3 (examples 8-9)

Read §1.4

§1.3: 67-70

§1.4: 19-26, 63-66, 73-84, 85-88

CA5: 5-9

- **Circles**

Read §1.3 (examples 4-8)

§1.3: 37-40, 43-48, 51-62

CA5: 5-14

- **Linear and quadratic functions**

Read §2.2

§2.2: 35-38

CA5: 15,16

Read §3.1

§3.1: 29-40

CA5: 17-22

- Exam 4

Polynomial Functions

- **Polynomial division**
Read §P.5
§P.5: 79-82
CA6: 1,2,3
- **Division with $x - c$**
Read §3.2 (examples 1-4)
§3.2: 11-14,19-22,23-27
CA6: 4-16
- **Rational zero theorem**
Read §3.2 (examples 5,6):
Read §3.3
Read §3.5 (example 5)
§3.3: 61-66, 70-74
§3.5: 91-94, 96
CA6: 17-23

Exponential and Logarithmic functions

- **Exponential function**
Read §4.1
§4.1: 9-20, 47-58
CA7: 1-6
- **Logarithmic Function**
Read §4.2
§4.2: 17-32,41-46
CA7: 7,8
- **Manipulation of Logarithms**
Read §4.3
§4.3: 11-18, 27-32, 37-48
CA7: 9-15
- **Logarithmic equations**
Read §4.4 (examples 1, 2)
§4.4: 1-32
CA7: 16-20
- **Exponential equations**
Read §4.4 (examples 3, 4)
§4.4: 33,34,37-52,55-58
CA7: 21-22