COLLEGE ALGEBRA HOMEWORK

- This homework is based on: M. Dugopolski: "College Algebra", 4th edition
- Homework will not be collected or graded. Nevertheless, 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)
  Read §1.7 (interval notation)
  §1.7: 1-8, 29-38
  CA1: 1,2,3,4

Equations

- **Properties of Equality**
- **Equations – Definitions**
- **Linear Equations**
  Read §1.1
  §1.1: 11, 12, 15-26
  CA2: 1
- **Quadratic Equations**
  Read §1.6
  §1.6: 1-14, 41-56
  CA2: 2,3
- **Polynomial equations**
  Read §3.4 (exaples 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
  CA2: 6,7,8,9
- **Rational equations**
  Read §1.1 (example 3)
  §1.1: 29, 30, 34-40
  CA2: 10

- **Parametric linear equations**
  CA2: 11, 12
  Exam 1

Inequalities

- **Properties of Inequality**
- **Linear Inequalities**
  Read §1.7 (examples 1,2,3)
  §1.7: 9-20
  CA2: 13
- **Quadratic Inequalities**
  Read §3.1 (example 6)
  Read "Review of Sign charts"
  §3.1: 45-56
  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: 73, 75, 77. 78, 81
  CA2: 15, 16
- **Rational inequalities**
  Read §3.6 (example 8)
  §3.6: 75-94 (use sign charts)
  CA2: 17, 18
- **Parametric quadratic equations**
  Read lecture notes
  §1.6: 95-100
  CA2: 19
- **Systems of inequalities**

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Read §1.7 (examples 5.6)
§1.7: 39, 42, 44, 45, 46
CA2: 20

- **Equations with Radicals**
  Read §3.4 (examples 3,4)
  §3.4: 11, 17, 19-23, 25,26
  CA2: 21, 22ab
  CA2: 22cde (optional)
- **Equations and Inequalities with absolute values**
  Read §1.1 (example 5)
  CA2: 23, 24 (optional)
- *equations*
  §1.1: 65-72, 85-90
  CA2: 25, 26
  CA2: 27 (optional)
- *inequalities*
  Read §1.7 (example 7)
  §1.7: 60-70
  CA2: 28,29
  CA2: 30 (optional)
  Exam 2

Functions

- **Preliminary concepts**
  Read §2.1
  §2.1: 17-20,37,38
  CA3: 1,2,3
- **Functions – basic concepts**
  §2.1: 25-30
  CA3: 4,5
- **Functions – Calculating the range**
  Read §2.2
  Read lecture notes, study examples
  §2.3: 35-50 (do them by algebra)
  CA3: 31
  CA3: 32 (optional)
- **Algebra with functions**
  Read §2.4 (examples 1,2,3)
  §2.4: 13-20, 21, 22, 25, 27, 28
  CA3: 6,7,8,9
- **Odd and even functions**
  Read §2.3 (symmetry – example 8)
  §2.3: 51-70
  CA3: 10, 11, 12
- **Function Composition**
  Read §2.4 (examples 4,5,6,7)

§2.4: 49-54, 58, 59
CA3: 13, 14, 15, 16, 17

- **Functions and monotonicity**
  Read §2.2 (example 10)
  CA3: 18,19,21 (you may use these to do the ones from the book at next line)
  §2.2: 55-58, 61-63,66
  CA3: 20, 22,23,24
- **Inverse Functions**
  Read §2.5
  §2.5: 7, 9, 12-14, 25, 27, 30, 32, 34
  CA3: 25, 26, 27, 28
  §2.5: 39, 41, 46,47, 48, 51
  CA3: 29, 30

Graphing Functions

- **Coordinate system**
  Read §1.3 (examples 1-3)
  §1.3: 16-18, 21-24
  CA4: 1-4
- **Lines**
  Read §1.3 (examples 7-8)
  Read §1.4
  §1.3: 59-62
  §1.4: 11-14, 52-56, 63-72, 75-78
  CA4: 5-9
- **Circles**
  Read §1.3 (examples 4-8)
  §1.3: 29-32, 35-40, 48-54
  CA4: 5-14
- **Linear and quadratic functions**
  Read §2.2
  §2.2: 34-36
  CA4: 15,16
  Read §3.1
  §3.1: 21-32
  CA4: 17-22
- **Exam 3**

Polynomial Functions

- **Polynomial division**
  Read §P.5
  §P.5: 73-76
  CA5: 1,2,3
- **Division with $x - c$**
  Read §3.2 (examples 1-4)
  §3.2: 7-13,19,20

CA5: 4-16
- **Rational zero theorem**
Read §3.2 (examples 5,6):
Read §3.3
Read §3.5 (example 5)
§3.3: 57-62, 66-70
§3.5: 80-84
CA5: 17-23

Exponential and Logarithnic functions

- **Exponential function**
Read §4.1
§4.1: 1-12, 31-42
CA6: 1-6
- **Logarithmic Function**
Read §4.2
§4.2: 9-24,33-38
CA6: 7,8
- **Manipulation of Logarithms**
Read §4.3
§4.3: 3.4.7.8.17-22. 23-28, 41-48
CA6: 9-15
- **Logarithmic equations**
Read §4.4 (examples 1, 2)
§4.4: 1-26
CA6: 16-20
- **Exponential equations**
Read §4.4 (examples 3, 4)

§4.4: 27-52
CA6: 21-22
Exam 4

Systems of Equations

- **2x2 linear systems**
Read §5.1 (optional)
Read §6.5 (examples 1-3)
§6.5: 17-26
CA7: 1, 2
- **3x3 linear systems**
Read §5.2
§5.2: 9-12
CA7: 3
- **Nonlinear systems**
Read §5.3
Linear+Quadratic systems
§5.3: 5-8,20
CA7: 4
The Fundamental system
§5.3: 21, 22
Symmetric systems
§5.3: 30
CA7: 6, 7, 8
Homogeneous systems
§5.3: 31, 32
CA7: 9
Final exam