

Math 22A Homework Assignments.

- All problems are from the **12th edition of *Elementary Linear Algebra* by Howard Anton and Chris Rorres.**
- As noted in the syllabus, only the homework problems marked “to submit” will be counted towards your grade. The other homework problems will not be submitted and are not counted towards your grade, but you are expected to complete them.
- Some of the True/False questions may be on topics we will not discuss in this class. You do not need to complete those True/False questions.

HOMEWORK 1

Section 1.1 (Introduction to Systems of Linear Equations)

Problems 1, 3, 5, 7, 9, 11, 12, 19, 21, 24, and True/False questions.

Section 1.2 (Gaussian Elimination)

Problems 1, 3, 5, 7, 15, 17, 23, 29, 31, 35, 37, 40, 41, 43, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, APRIL 10:

Section 1.1 Problems 12 and Section 1.2 Problem 15

HOMEWORK 2

Section 1.3 (Matrices and Matrix Operations)

Problems 1, 3, 5, 7, 11, 13, 15, 23, 35, and True/False questions.

Section 1.4 (Inverses; Algebraic Properties of Matrices)

Problems 3, 5, 7, 9, 11, 13, 15, 17, 19, 25, 27, 31, 35, 39, 41, 43, 49, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, APRIL 17:

Section 1.3 Problem 15 and Section 1.4 Problem 25

HOMEWORK 3

Section 1.5 (Elementary Matrices and a Method for Finding A^{-1})

Problems 1, 3, 5, 7, 9, 11, 13, 15, 19, 23, 25, 27, and True/False questions.

Section 1.6 (More on Linear Systems and Invertible Matrices)

Problems 1, 3, 5, 7, 9, 11, 13, 15, 17, 18, 19, 21, and True/False questions.

Section 1.7 (Diagonal, Triangular, and Symmetric Matrices)

Problems 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 25, 27, 31, and True/False questions.

Section 9.1 (*LU*-Decomposition)

Problems 1, 2, 3, 5, 9, 11, 13, 14, 15, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, APRIL 24:

Section 1.5 Problem 11 and Section 9.1 Problem 5

HOMEWORK 4

Section 2.1 (Determinants by Cofactor Expansion)

Problems 1, 3, 5, 7, 15, 16, 21, 23, 24, 25, 27, 29, 31, 33, 38, 39 and True/False questions.

Section 2.2 (Evaluating Determinants by Row Reduction)

Problems 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 24, 25, 26, 27, 28, 29, and True/False questions.

Section 2.3 (Properties of Determinants)

Problems 1, 3, 5, 7, 9, 11, 13, 15, 17, 35, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, MAY 1:

Section 2.1 Problem 21 and Section 2.2 Problem 21

HOMEWORK 5

Section 3.1 (Vectors in 2-Space, 3-Space, and n -Space)

Problems 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 25, and True/False questions.

Section 3.2 (Norm, Dot Product, and Distance in R^n)

Problems 1, 3, 5, 7, 9, 11, 13, 15, 16, 27, and True/False questions.

Section 3.3 (Orthogonality)

Problems 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 34, and True/False questions.

Section 3.4 (The Geometry of Linear Systems)

Problems 1, 3, 5, 7, 9, 11, 13, 17, 19, 21, and True/False questions.

Section 3.5 (Cross Product)

Problems 1, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 33, 35, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, MAY 8:

Section 3.2 Problem 15 and Section 3.3 Problem 13

HOMEWORK 6

Section 4.1 (Real Vector Spaces)

Problems 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 17, 18, and True/False questions.

Section 4.2 (Subspaces)

Problems 1, 2, 3, 4, 5, 6, 7, 9, 11, 13, 15, 16, 19, and True/False questions.

Section 4.3 (Spanning Sets)

Problems 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 20, and True/False questions.

Section 4.4 (Linear Independence)

Problems 1, 2, 4, 5, 6, 7, 8, 9, 11, 17, 18, 19, 20, 21, 22, and True/False questions.

Section 4.5 (Coordinates and Basis)

Problems 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 19, 20, and True/False questions.

Section 4.6 (Dimension)

Problems 1, 3, 5, 7, 9, 12, 14, 15, 16, 17, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, MAY 15:

Section 4.2 Problem 4 and Section 4.4 Problem 11

HOMEWORK 7

Section 4.8 (Row Space, Column Space, and Null Space)

Problems 1, 3, 5, 7, 9, 11, 13, 15, 19, 23, 25, 27, and True/False questions.

Section 4.9 (Rank, Nullity, and the Fundamental Matrix Spaces)

Problems 1, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 27, 28, 29, 30, 31, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, MAY 22:

Section 4.8 Problem 7 and Section 4.9 Problem 13

HOMEWORK 8

Section 6.3 (Gram-Schmidt Process; QR -Decomposition)

Problems 1, 2, 5, 15, 17, 19, 21, 23, 25, 27, 29, 32, 35, 44, 45, 46, 47, 48, 49, and True/False questions.

Section 6.4 (Best Approximation; Least Squares)

Problems 1, 3, 4, 5, 7, 8, 9, 11, 13, 15, 17, and True/False questions.

Section 6.5 (Mathematical Modeling Using Least Squares)

Problems 1, 2, 3, 4

Section 7.1 (Orthogonal Matrices)

Problems 1, 3, 4, 6, 11, 12, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON WEDNESDAY, MAY 31:

Section 6.3 Problem 29 and Section 6.5 Problem 2

HOMEWORK 9

Section 5.1 (Eigenvalues and Eigenvectors)

Problems 1, 3, 5, 7, 9, 11, 13, 24, 25, and True/False questions.

Section 5.2 (Diagonalization)

Problems 5, 6, 7, 8, 9, 19, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 27, 28, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, JUNE 5:

Section 5.1 Problem 7 and Section 5.2 Problem 8