Math 22A Homework Assignments.

- All problems are from the 11th 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.
- See the file posted on Canvas for the homework problems.
- Please note that in some cases the problem statement may ask you to solve the problem by using a particular theorem from the textbook. If you do not have a copy of the book, feel free to solve the problem using any of the methods outlined in class.
- 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, 5, 7, 9, 11, 12, 19, 24, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, SEPTEMBER 26:
Section 1.1 Problems 9 and 11

HOMEWORK 2

Section 1.2 (Gaussian Elimination)
Problems 1, 15, 17, 23, 29, 35, 37, 40, 43, and True/False questions.

Section 1.3 (Matrices and Matrix Operations)
Problems 5, 11, 13, 15, 23, and True/False questions.

Section 1.4 (Inverses; Algebraic Properties of Matrices)
Problems 5, 9, 17, 25, 31, 35, 39, 41, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, OCTOBER 3:
Section 1.2 Problem 35 and Section 1.3 Problem 15

HOMEWORK 3

Section 1.5 (Elementary Matrices and a Method for Finding A^{-1})
Problems 1, 5, 7, 11, 19, 23, and True/False questions.

Section 1.6 (More on Linear Systems and Invertible Matrices)
Problems 1, 3, 18, 19, 21, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, OCTOBER 10:
Section 1.5 Problem 1 and Section 1.6 Problem 3

HOMEWORK 4

Section 1.7 (Diagonal, Triangular, and Symmetric Matrices)
Problems 3, 7, 11, 13, 15, 19, and True/False questions.

Section 9.1 (LU-Decomposition)
Problems 1, 2, 3, 5, 11, 13, 14, 15, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, OCTOBER 17:
Section 9.1 Problems 5 and 13

HOMEWORK 5

Section 2.1 (Determinants by Cofactor Expansion)
Problems 15, 16, 21, 23, 24, 27, 29, 33, and True/False questions.

Section 2.2 (Evaluating Determinants by Row Reduction)
Problems 9, 15, 17, 19, 21, 24, and True/False questions.

Section 2.3 (Properties of Determinants; Cramer's Rule)
Problems 7, 11, 15, 17, 35, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, OCTOBER 24:
Section 2.1 Problem 21 and Section 2.2 Problem 19

HOMEWORK 6

Section 3.1 (Vectors in 2-Space, 3-Space, and n-Space)
Problems 3, 7, 9, 17, 19, and True/False questions.

Section 3.2 (Norm, Dot Product, and Distance in R^n)
Problems 3, 7, 9, 11, 15, 16, and True/False questions.

Section 3.3 (Orthogonality)
Problems 1, 3, 7, 11, 13, 15, 17, 21, 25, 34, and True/False questions.

Section 3.4 (The Geometry of Linear Systems)
Problems 1, 5, 9, 13, 17, 21, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, OCTOBER 31:
Section 3.2 Problem 7 and Section 3.3 Problem 13

HOMEWORK 7

Section 4.1 (Real Vector Spaces)
Problems 1, 5, 9, 17, and True/False questions.

Section 4.2 (Subspaces)
Problems 1, 2, 6, 7, 9, 11, and True/False questions.

Section 4.3 (Linear Independence)
Problems 2, 7, 11, 17, 19, 21, and True/False questions.

Section 4.4 (Coordinates and Basis)
Problems 1, 7, 10, and True/False questions.

Section 4.5 (Dimension)
Problems 1, 7, 9, 17, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, NOVEMBER 7:
Section 4.2 Problem 1 and Section 4.3 Problem 11

HOMEWORK 8

Section 4.7 (Row Space, Column Space, and Null Space)
Problems 1, 3, 5, 9, 11, 15, and True/False questions.

Section 4.8 (Rank, Nullity, and the Fundamental Matrix Spaces)
Problems 1, 4, 6, 7, 8, 9, 17, 18, 19, 21, 27, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, NOVEMBER 14:
Section 4.7 Problem 9 and Section 4.8 Problem 1

HOMEWORK 9

Section 6.4 (Best Approximation; Least Squares)
Problems 1, 3, 15, 17, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, NOVEMBER 21:
Section 6.4 Problems 3 and 17

HOMEWORK 10

Section 6.3 (Gram-Schmidt Process; *QR*-Decomposition)
Problems 1, 2, 5, 19, 21, 23, 27, 29, 32, 45, 47, 49, and True/False questions.

Section 7.1 (Orthogonal Matrices)
Problems 1, 3, and True/False questions.

SUBMIT TO GRADESCOPE BY 10:00PM ON MONDAY, NOVEMBER 28:
Section 6.3 Problem 49 and Section 7.1 Problem 3

HOMEWORK 11

Section 5.1 (Eigenvalues and Eigenvectors)
Problems 1, 3, 5, 7, 9, 11, 13, 24, and True/False questions.

Section 5.2 (Diagonalization)
Problems 5, 7, 9, 11, 13, 17, 19, 21, and True/False questions.

NO PROBLEMS TO SUBMIT FOR THIS HOMEWORK!