Exercises for Week 8

The work handed in should be entirely your own. You can consult the textbook and/or the class notes but nothing else. To receive full credit, justify your answer in a clear and logical way. Due April 5.

Reading. Read Sections 4.1–4.2 of the textbook carefully.

1. Prove the following statement:

   Theorem 1. *Let A be an $n \times n$ matrix over a field F, and $\mathbf{x}$ a column of n variables. Let $\mathbf{b}$ be a column of n fixed numbers in $\mathbb{F}$. Then the system of equations $A\mathbf{x} = \mathbf{b}$ has a unique solution if and only if A is an invertible matrix.*

2. Section 4.1 Exercise 1, 3 (b) (c), 5, 6, 7, 10.

3. Section 4.2 Exercise 1, 2, 4, 7, 9, 20, 23, 29.