MATH 3A HOMEWORK 3
DUE: Wednesday, October 26

READING ASSIGNMENT: Read Sections 1.8, 1.9, 2.1, 2.2

PROBLEMS FROM TEXTBOOK:
Section 1.8: 4, 9, 11, 24, 30, 34
Section 1.9: 2, 3, 8, 10, 17, 25
Section 2.1: 1, 9, 15, 22, 24, 27
Section 2.2: 2, 6, 10, 20, 25, 30, 31

ADDITIONAL PROBLEMS:

1) Let $\mathbb{N} = \{0, 1, 2, 3, \dots\}$ be the set of all natural numbers. Let $f : \mathbb{N} \to \mathbb{N}$ be the function: $f(n) = n + 1$ for all $n \in \mathbb{N}$. Describe the range of f and explain if f is one-to-one and/or onto.

2) True or False. Explain your answers.

(i) If A is an invertible $n \times n$ matrix, then the equation $A\vec{x} = \vec{b}$ is consistent for each $\vec{b}$ in $\mathbb{R}^n$.

(ii) For any matrices A, B, C, if AB and AC are defined and $AB = AC$, then $B = C$.

(iii) Let $n > m$ be natural numbers and $T : \mathbb{R}^n \to \mathbb{R}^m$, then it is impossible for T to be one-to-one.

(iv) The map $T_x : \mathbb{R}^2 \to \mathbb{R}^2$ discussed in class (recall T_x is the projection onto the x-axis function) is one-to-one and is onto.