Homework Week 5

MATH 204: Linear Algebra
Due September 29, 2017 **by 1:55pm** Name (Print): _____

Remember that although you may discuss this assignment with others, your write up should be your own. **Do not share your write-up, look at other's write-ups, discuss word for word how something should be proved, etc.** Be sure to note with whom you collaborate if you do collaborate.

1. Number 12 from Section 1.7, page 62.

2. Number 38 from Section 1.7, page 62. (Hint: Try proof by contraposition!)

3. Determine whether each of the following transformations is linear. Justify your conclusions.

   (a) $T : \mathbb{R}^2 \to \mathbb{R}^3$ defined by $T\left(\begin{bmatrix} x_1 \\ x_2 \end{bmatrix}\right) = \begin{bmatrix} x_2 \\ x_1 \\ x_1 + 2x_2 \end{bmatrix}$.

   (b) $T : \mathbb{R}^3 \to \mathbb{R}^2$ defined by $T\left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}\right) = \begin{bmatrix} x_1^2 \\ x_3 \end{bmatrix}$.