Math 2030, Matrix Theory and Linear Algebra I, Winter 2014

Homework 3
Due: Wednesday, January 29, 2014

Part I: True or false questions

Decide whether each statement is true or false. If it is false, give a reason.

1. The matrix $\begin{bmatrix} 1 & 0 & 2 & 3 \\ 2 & 1 & 0 & 0 \\ 0 & 0 & 3 & 0 \end{bmatrix}$ has rank 2.

2. A system of m linear equations in n variables has an infinite number of solutions when $m < n$.

3. The linear system

$$
\begin{array}{rrrrrrr}
2x & + & 4y & - & 3z & = & 12 \\
7x & + & y & - & z & = & 3 \\
-4x & - & 8y & + & 6z & = & 3
\end{array}
$$

   has a unique solution.

4. Elementary row operations on an augmented matrix never change the solution set of the associated linear system.

Part II: Book questions

Do the following questions from the textbook:

- 2.2 #26, 30, 46, 48, 58.