Math 2210Q (Roby) **Practice Quiz #1** [Today's Date]

PLEASE WRITE YOUR NAME AT THE BOTTOM OF THE BACK OF THIS SHEET, NOT ON THE FRONT.

1. Mark each of the following as **True** or **False**. You may give reasoning to support your answer, which may give you partial credit. **To show a statement is false, a specific numerical counterexample is generally best!**

   (a) The vector $2\mathbf{v}_1 + \sqrt{5}\mathbf{v}_3$ is a linear combination of $\mathbf{v}_1, \mathbf{v}_2$ and $\mathbf{v_3}$.

   (b) Asking whether the linear system corresponding to an augmented matrix $[\mathbf{a}_1\ \mathbf{a}_2\ \mathbf{a}_3\ \mathbf{b}]$ has a solution amounts to asking whether $\mathbf{b}$ is in $\text{Span}\{\mathbf{a}_1, \mathbf{a}_2, \mathbf{a}_3\}$.

   (c) Whenever a system has free variables, the solution set contains more than one solution.

2. Find the general solution of the system whose augmented matrix below by using Gaussian elimination to put it in row-reduced echelon form.

$$\begin{pmatrix} 0 & 1 & -6 & 5 \\ 1 & -2 & 7 & -6 \end{pmatrix}$$

3. Is the following matrix in reduced echelon form, echelon form, or neither? Explain!

$$\begin{pmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$