Quiz 1, Linear - Fall 2017

Name: _____

1. (4 points) Use matrices to solve the system. Show your work.

$$
\begin{array}{rrrcr}
x_1 & & -4x_3 & = & 9 \\
2x_1 & +2x_2 & +9x_3 & = & 7 \\
& x_2 & +5x_3 & = & -2
\end{array}
$$

2. (4 points) (a) Determine the value(s) of h such that the matrix is the augmented matrix of a consistent linear system.
   (b) Which value(s) of h, if any exist, correspond to a system with a unique solution?
   (c) Which value(s) correspond to a system with an infinite number of solutions?

$$\left[\begin{array}{cc|c} 1 & 4 & -2 \\ 2 & h & -4 \end{array}\right]$$

3. (2 points) A system of linear equations with fewer equations (rows) than unknowns (columns) is called an *underdetermined* system. Suppose such a system happens to be consistent. Explain (briefly) why there must be an infinite number of solutions. Giving an example may help your explanation.