Math 2210-006/011 Quiz 2 **Name:** Key **Due:** 9/16/19

This is a two-stage quiz. You will receive this back with each question graded pass/fail in our next class meeting. You have until the date specified above to submit corrections for partial credit.

1. (5 points) Solve the following linear system by way of finding a particular matrix in reduced echelon form. If there are no solutions, justify why.

$$\begin{aligned} x_1 - 7x_2 \qquad + 6x_4 &= 5 \\ x_3 - 2x_4 &= -3 \\ -x_1 + 7x_2 - 4x_3 + 2x_4 &= 7 \end{aligned}$$

$$\left[\begin{array}{cccc|c} 1 & -7 & 0 & 6 & 5 \\ 0 & 0 & 1 & -2 & -3 \\ -1 & 7 & -4 & 2 & 7 \end{array}\right] \sim \left[\begin{array}{cccc|c} 1 & -7 & 0 & 6 & 5 \\ 0 & 0 & 1 & -2 & -3 \\ 0 & 0 & -4 & 8 & 12 \end{array}\right]$$

$$\sim \left[\begin{array}{cccc|c} 1 & -7 & 0 & 6 & 5 \\ 0 & 0 & 1 & -2 & -3 \\ 0 & 0 & 0 & 0 & 0 \end{array}\right]$$

$\Rightarrow$

$$\begin{aligned} x_1 &= 7x_2 - 6x_4 + 5 \\ x_3 &= 2x_4 - 3 \\ x_2, x_4 &\text{ free} \end{aligned}$$

2. (5 points) Determine which values of h make the following matrix the augmented matrix of a consistent linear system.

$$\begin{bmatrix} 3 & -1 & h \\ -6 & 2 & 4 \end{bmatrix}$$

$$\begin{bmatrix} 3 & -1 & h \\ -6 & 2 & 4 \end{bmatrix} \sim \begin{bmatrix} 3 & -1 & h \\ 0 & 0 & 4+2h \end{bmatrix}$$

So, this corresponds to a consistent system so long as $4+2h=0$, i.e. if $\boxed{h=-2}$