

NAME: *Zayd Hommaudeh**5 pts*

2 pts. The augmented matrix of a linear system has been reduced by row operations to the form shown. Continue the appropriate row operations and describe the solution set of the original system.

$$\begin{bmatrix} 1 & 7 & 3 & -4 \\ 0 & 1 & -1 & 3 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & -2 \end{bmatrix}$$

The solution set is empty (i.e., there is no solution) since there is a contradiction in row 3 as there is a row in the form  $[0 \ 0 \ 0 \ b]$  (where  $b \neq 0$ ) which implies  $0 = b$  which is clearly false. This system is inconsistent.

3 pts. Determine the value(s) of  $h$  such that the matrix is the augmented matrix of a consistent linear system.

$$\begin{bmatrix} 1 & h & 4 \\ 3 & 6 & 8 \end{bmatrix}$$

$$R_2' = R_2 - 3R_1$$

$$\begin{bmatrix} 1 & h & 4 \\ 0 & 6-3h & 8-4h \end{bmatrix}$$

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

Consistent if

$$6-3h \neq 0$$

$$6 \neq 3h$$

$$\boxed{h \neq 2}$$