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5pts

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 $[0.00 \; b]$ (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.

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

$R_2' = R_2 - 3R_1$

$$\begin{bmatrix} 1 & h & 4 \\ 0 & 6-3h & 8-4\cdot3 \end{bmatrix}$$

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

Consistent if $6 - 3h \neq 0$

$6 \neq 3h$

$\boxed{h \neq 2}$