

Quiz 1 Solution, Math 310, 13 January 2016

Problem 1. Determine the value(s) of h such that the augmented matrix $\begin{pmatrix} 1 & -3 & -2 \\ 5 & h & -7 \end{pmatrix}$ is consistent.

Solution. After performing elementary row operations, we have the augmented matrix $\begin{pmatrix} 1 & -3 & -2 \\ 0 & h+15 & 3 \end{pmatrix}$, which is in Echelon form. Hence if $h = -15$, we have $0 = 3$ which is impossible. Therefore for $h \neq -15$, the system is consistent.

Problem 2. Solve the linear system whose augmented matrix is $\begin{pmatrix} 1 & 3 & 5 & 7 \\ 3 & 5 & 7 & 9 \\ 5 & 7 & 9 & 1 \end{pmatrix}$.

Solution. After performing elementary row operations, we have the augmented matrix $\begin{pmatrix} 1 & 3 & 5 & 7 \\ 0 & -4 & -8 & -12 \\ 0 & 0 & 0 & -10 \end{pmatrix}$, which is in Echelon form. However, the last row states that $0 = 10$, which is a contradiction. Therefore, there are no solutions to the system.