Math 54 Handout 1

June 18, 2018

Question 1.

Determine if the following system is consistent, and if so, find the solution:

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

Question 2.

Determine the values of h such that the matrix

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

is the augmented matrix of a consistent linear system.

Question 3.

Suppose the following system of equations

$$\begin{aligned} x_1 + 3x_2 &= u \\ cx_1 + dx_2 &= v \end{aligned}$$

has a solution for all possible $u, v \in \mathbb{R}$. What does this say about c and d?

Question 4.

Row reduce to reduced echelon form:

$$\begin{pmatrix} 1 & -2 & -1 & 3 \\ 3 & -6 & -2 & 2 \end{pmatrix}$$

Question 5.

Find the general solution of the system whose augmented matrix is given:

$$\begin{pmatrix} 0 & 1 & -6 & 5 \\ 1 & -2 & 7 & -6 \end{pmatrix}$$

Question 6.

Suppose a 3×5 coefficient matrix for a system has three pivot columns. Is the system consistent? Why or why not?