1 Matrices

1. (a) If $A = \begin{bmatrix} 1 & 2 & -3 \\ 2 & 0 & -3 \\ 1 & 2 & 0 \end{bmatrix}$ then find A^{-1} and hence solve the following system of equations :

$$x + 2y - 3z = 1$$
$$2x - 3z = 2$$
$$x + 2y = 3$$

(b) Find the product of the matrices $\begin{bmatrix} 1 & 2 & -3 \\ 2 & 3 & 2 \\ 3 & -3 & -4 \end{bmatrix} \begin{bmatrix} -6 & 17 & 13 \\ 14 & 5 & -8 \\ -15 & 9 & -1 \end{bmatrix}$

and hence solve the system of linear equations :

$$x + 2y - 3z = -4$$
$$2x + 3y+ = 2z = 2$$
$$3x - 3y - 4z = 11$$