2015 SM1 Week 4 Investigation

Part A

Determine by using an example whether the commutative law holds for matrix multiplication.

Part B

i. Using matrices, attempt to solve these equations: $2x - y = 4 \ \ and \ \ 4x - 2y = 12.$

ii. Explain, with the aid of a graph, why there is no unique solution.

Part C

i. Research a method of finding the inverse of a 3 x 3 matrix by hand and use it to find the inverse of

$$\begin{bmatrix} 1 & -1 & 0 \\ 0 & 1 & -1 \\ 1 & 0 & 1 \end{bmatrix}.$$

ii. Hence, find the solution set of this system of equations:

$$x - y = 1$$

$$y - z = 2$$

$$x + z = 3$$