MAU22E01 2020 (SF Engineers & MSISS & MEMS)

S h e e t 4

Practice sheet - will not be marked

It is important to be able to do all the problems, including unmarked ones, to ensure you are prepared for the exam.

Exercise 1

Write the general solution of the system as a sum of its partial solution and a linear combination of basis vectors of solution space of the associated homogenous system:

(i)
$$\begin{cases} x + y + t = 1 \\ -z + t = -3 \end{cases};$$

(ii)
$$\begin{cases} x_4 - x_3 = 1 \\ x_3 - x_2 = 2 \\ x_2 - x_1 = 3 \end{cases};$$

(iii)
$$x_1 + x_2 + x_3 - x_4 = 3.$$

Exercise 2

Find bases and dimensions for the row and column spaces of the matrix:

(i) $\begin{pmatrix} 1 & 2 & 1 \\ 1 & 1 & 0 \end{pmatrix};$

(ii) $\begin{pmatrix} -3 & -6 \\ 1 & 2 \\ 4 & 8 \end{pmatrix};$

(iii) $\begin{pmatrix} -3 & -6 & 1 \\ 1 & 2 & 1 \\ 4 & 8 & -1 \end{pmatrix}.$