LINEAR ALGEBRA
— MA 242 —

Solutions to even problems

HW 5

1.7 .

10: a. No h. b. All h.

1.9 .

36: The transformation T maps $\mathbb{R}^n$ onto $\mathbb{R}^m$ if and only if for each $y \in \mathbb{R}^m$ there exists an x in $\mathbb{R}^n$ such that $y = T(x)$.

2.1 .

2:

$$A+3B = \begin{bmatrix} 23 & -15 & 2 \\ 7 & -17 & -7 \end{bmatrix}, \ 2C-E \text{ not defined}, \ DB = \begin{bmatrix} 26 & -35 & -12 \\ -3 & -11 & -13 \end{bmatrix}, \ EC \text{ not defined}$$

6:

$$Ab_1 = \begin{bmatrix} -5 \\ 12 \\ 3 \end{bmatrix}, \ Ab_2 = \begin{bmatrix} 22 \\ -22 \\ -2 \end{bmatrix}, \ AB = \begin{bmatrix} -5 & 22 \\ 12 & -22 \\ 3 & -2 \end{bmatrix}$$

10:

$$AB = AC = \begin{bmatrix} -21 & -21 \\ 7 & 7 \end{bmatrix}$$

12: Suitable columns for B is any multiple of $[2, 1]$.

2.2 .

2: $\begin{bmatrix} -5 & 2 \\ 8 & -3 \end{bmatrix}$ **4**: $\frac{1}{4}\begin{bmatrix} -6 & -4 \\ 2 & 4 \end{bmatrix}$ **6**: $x_1 = -5, x_2 = 26/3$

12: $AD = I \Rightarrow A^{-1}AD = A^{-1}I \Rightarrow ID = A^{-1} \Rightarrow D = A^{-1}$

Solutions to linear transformations sheet can be found in the textbook, p.73-75.