

SKETCHES OF SOLUTIONS FOR PRACTIC MIDTERM

This are only SKETCHES of the solutions. In the exam, you will have to show your work and give more explanations. But, at least, it should give you some idea whether you are on the right track.

1. $x_1 = 10/7, x_2 = 8/7, x_3 = 2/7$.
2. Do for yourself.
3. (a) No (follows from echelon form of augmented matrix - you have to explain this in your exam)
(b) No. If $\mathbf{a}_1, \mathbf{a}_2, \mathbf{a}_3$ are the columns of A , then $-3\mathbf{a}_1 + 2\mathbf{a}_2 + \mathbf{a}_3 = \mathbf{0}$. You have to do the calculation, or give some other reason why the vectors are linearly dependent.
4. (a) $A = \begin{bmatrix} 2 & 3 & -2 \\ 1 & -1 & 2 \end{bmatrix}$
(b) $T(-\mathbf{e}_1 + 2\mathbf{e}_2 + 3\mathbf{e}_3) = -T(\mathbf{e}_1) + 3T(\mathbf{e}_2) + 3T(\mathbf{e}_3) = \begin{bmatrix} -2 \\ 3 \end{bmatrix}$
(c) No
(d) Yes

IMPORTANT: You have to justify your answers. E.g. for 4(c),(d) you should calculate the echelon form of A , and give a reason why the answer follows from the particular shape of the echelon form (or find some other valid reason).