

### 3A: Extra exercises 2

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Remark: the exercise below will be graded carefully. Give explanations and computations.

#### Exercise 1

Consider the matrix  $A = \begin{bmatrix} 1 & 2 & 1 & 1 & 1 \\ 3 & 6 & 0 & 3 & 1 \\ 2 & 4 & 2 & 1 & 1 \end{bmatrix}$  and vector  $\mathbf{b} = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ . Finally, consider the vector

$$\mathbf{c} = \begin{bmatrix} 1 \\ -1 \\ 2 \\ 1 \\ 3 \end{bmatrix}.$$

- Compute  $A\mathbf{c}$ .
- Find the solution(s) of the equation

$$A\mathbf{x} = \mathbf{b}$$

in parametric vector form.

- Find the solution(s) of the equation

$$A\mathbf{x} = \mathbf{0}$$

in parametric vector form.

- Determine whether the first, second and fourth columns of  $A$  are linearly independent or not.