Homework 15 MATH 304 Section 3

Assigned: Friday, October 24.
Potentially Collected: Friday, October 31.

1. For each of the following (i) find a basis $\mathcal{B}$ for the subspace of V spanned by $\mathcal{X}$ (ii) find a basis $\mathcal{C}$ for V which contains $\mathcal{B}$.

   (a) V is $\mathbb{R}^2$ and $\mathcal{X} = \left\{ \begin{bmatrix} 2 \\ -5 \end{bmatrix}, \begin{bmatrix} -4 \\ 10 \end{bmatrix}, \begin{bmatrix} -3 \\ 6 \end{bmatrix} \right\}$

   (b) V is $\mathbb{R}^3$ and $\mathcal{X} = \left\{ \begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 3 \\ 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 9 \\ 4 \\ -2 \end{bmatrix}, \begin{bmatrix} -7 \\ -3 \\ 1 \end{bmatrix} \right\}$

   (c) V is $\mathbb{R}^3$ and $\mathcal{X} = \left\{ \begin{bmatrix} 1 \\ -2 \\ 0 \end{bmatrix}, \begin{bmatrix} -3 \\ 4 \\ 1 \end{bmatrix}, \begin{bmatrix} -8 \\ 6 \\ 5 \end{bmatrix}, \begin{bmatrix} -3 \\ 0 \\ 7 \end{bmatrix} \right\}$