

1.7 Handwrite Practice

Handwrite your responses to 1. and 2. below and collate them into a PDF for submission into ASULearn.

1. Let $\vec{v}_1 = \begin{bmatrix} 1 \\ -3 \\ 2 \end{bmatrix}$, $\vec{v}_2 = \begin{bmatrix} -3 \\ 9 \\ -6 \end{bmatrix}$, and $\vec{v}_3 = \begin{bmatrix} 5 \\ -7 \\ h \end{bmatrix}$

- a) Is \vec{v}_3 ever in the span of $\{\vec{v}_1, \vec{v}_2\}$? If so, for which values of h ? Show work/reasoning.
- b) Is $\{\vec{v}_1, \vec{v}_2, \vec{v}_3\}$ ever linearly independent. If so, for which values of h ? Show work/reasoning.

2. Construct and analyze matrices directed below:

- a) Construct a 3×2 matrix A so that $A\vec{x} = \vec{0}$ has a nontrivial solution.
- b) Are the columns of A linearly independent?
- c) Construct a 3×2 matrix B so that $B\vec{x} = \vec{0}$ has only the trivial solution.
- d) Are the columns of B linearly independent?
- e) How many pivots do A and B each have? Show reasoning.