# Homework #3

**MATH 237 — Linear Algebra I**
**due Thursday, Sep 10, in class**

***Please print your name:***

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**Problem 1.** Determine if the vector $\begin{bmatrix} -5 \\ 11 \\ -7 \end{bmatrix}$ is a linear combination of $\begin{bmatrix} 1 \\ -2 \\ 2 \end{bmatrix}, \begin{bmatrix} 0 \\ 5 \\ 5 \end{bmatrix}, \begin{bmatrix} 2 \\ 0 \\ 8 \end{bmatrix}$.

**Problem 2.**

(a) Is $\begin{bmatrix} 2 \\ -1 \\ 6 \end{bmatrix}$ in $\operatorname{span}\left\{\begin{bmatrix} 1 \\ -2 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 2 \end{bmatrix}, \begin{bmatrix} 5 \\ -6 \\ 8 \end{bmatrix}\right\}$?

(b) If possible, write $\begin{bmatrix} 2 \\ -1 \\ 6 \end{bmatrix}$ as a linear combination of $\begin{bmatrix} 1 \\ -2 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 2 \end{bmatrix}, \begin{bmatrix} 5 \\ -6 \\ 8 \end{bmatrix}$.

(c) Is there more than one way to write $\begin{bmatrix} 2 \\ -1 \\ 6 \end{bmatrix}$ as a linear combination of $\begin{bmatrix} 1 \\ -2 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 2 \end{bmatrix}, \begin{bmatrix} 5 \\ -6 \\ 8 \end{bmatrix}$?

**Problem 3.** Calculate $\begin{bmatrix} 1 & 0 & 5 \\ -2 & 1 & -6 \\ 0 & 2 & 8 \end{bmatrix} \begin{bmatrix} 7 \\ 7 \\ -1 \end{bmatrix}$. [How does this relate to the previous problem?]

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