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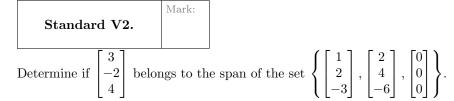
Date:

## MASTERY QUIZ DAY 13

Math 237 – Linear Algebra Fall 2017

Version 5

Show all work. Answers without work will not receive credit. You may use a calculator, but you must show all relevant work to receive credit for a standard.



Solution: Since

$$RREF\left(\begin{bmatrix} 1 & 2 & 0 & 3 \\ 2 & 4 & 0 & -2 \\ -3 & -6 & 0 & 4 \end{bmatrix}\right) = \begin{bmatrix} 1 & 2 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

contains the contradiction 0 = 1,  $\begin{bmatrix} 3 \\ -2 \\ 4 \end{bmatrix}$  is not a linear combination of the three vectors.

Standard S1.

Determine if the vectors  $\begin{bmatrix} 1\\1\\-1 \end{bmatrix}$ ,  $\begin{bmatrix} 3\\-1\\1 \end{bmatrix}$ , and  $\begin{bmatrix} 2\\0\\-2 \end{bmatrix}$  are linearly dependent or linearly independent

Solution:  $RREF \left( \begin{bmatrix} 1 & 3 & 2 \\ 1 & -1 & 0 \\ -1 & 1 & -2 \end{bmatrix} \right) = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ 

Since each column is a pivot column, the vectors are linearly independent.

Additional Notes/Marks