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Version 1

Math 237 – Linear Algebra Fall 2017

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.

Standard V2.	Mark:					
Determine if $\begin{bmatrix} 0 \\ -1 \\ 2 \\ 6 \end{bmatrix}$ can	ı be writte	en as a linear combination of the vectors	$\begin{bmatrix} 3 \\ -1 \\ -1 \\ 0 \end{bmatrix}$	and	$\begin{bmatrix} -1\\0\\1\\2 \end{bmatrix}$	

Standard S1.

Mark:

Determine if the set of matrices $\left\{ \begin{bmatrix} 3 & -1 \\ 0 & 4 \end{bmatrix}, \begin{bmatrix} 1 & 2 \\ -2 & 1 \end{bmatrix}, \begin{bmatrix} 3 & -8 \\ 6 & 5 \end{bmatrix} \right\}$ is linearly dependent or linearly independent.

Standard S3.

$$\begin{bmatrix}
\begin{bmatrix} 2 \\ 0 \\ -2 \\ 0 \end{bmatrix}, \begin{bmatrix} 3 \\ 1 \\ 3 \\ 6 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 2 \\ 0 \\ 1 \end{bmatrix} \\
\end{bmatrix}$$
Let $W = \operatorname{span} \left(\left\{ \begin{bmatrix} 2 \\ 0 \\ -2 \\ 0 \end{bmatrix}, \begin{bmatrix} 3 \\ 1 \\ 3 \\ 6 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 2 \\ 0 \\ 1 \end{bmatrix} \right\} \right)$. Find a basis of W .

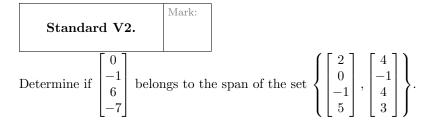
Standard S4.
$$\begin{bmatrix} & & & \\ & & & & \\ & &$$

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Version 2

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.



	Mark:
Standard S1.	

Determine if the set of polynomials $\{x^2 + x, x^2 + 2x - 1, x^2 + 3x - 2\}$ is linearly dependent or linearly independent

Standard S3.

$$\begin{bmatrix}
Mark: \\
Mark: \\
\end{bmatrix}$$
Let $W = \operatorname{span} \left(\left\{ \begin{bmatrix} 1 \\ 1 \\ 2 \\ 1 \end{bmatrix}, \begin{bmatrix} 3 \\ 3 \\ 6 \\ 3 \end{bmatrix}, \begin{bmatrix} 3 \\ -1 \\ 3 \\ -2 \end{bmatrix}, \begin{bmatrix} 7 \\ -1 \\ 8 \\ -3 \end{bmatrix} \right\} \right)$. Find a basis for W .

Standard S4.
$$\begin{bmatrix} & & & \\ & & & & \\ & &$$

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Version 3 Fall 2017 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.

Standard V	Mark					
Determine if $\begin{bmatrix} 0 \\ -1 \\ 2 \\ 6 \end{bmatrix}$	can be wri	tten as a linear combination of the vectors	$\begin{bmatrix} 3 \\ -1 \\ -1 \\ 0 \end{bmatrix}$	and	$\begin{bmatrix} -1\\0\\1\\2 \end{bmatrix}.$	•

Standard S1.	Mark:			
Determine if the vectors	$\begin{bmatrix} 1 \\ 1 \\ -1 \end{bmatrix},$	$\begin{bmatrix} 3 \\ -1 \\ 1 \end{bmatrix}$, and $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$	$\begin{bmatrix} 2 \\ 0 \\ -2 \end{bmatrix}$	are linearly dependent or linearly independent

Let W be the subspace of \mathcal{P}_3 given by $W = \text{span} \left(\left\{ x^3 + x^2 + 2x + 1, 3x^3 + 3x^2 + 6x + 3, 3x^3 - x^2 + 3x - 2, 7x^3 - x^2 + 8x - 3 \right\} \right)$. Find a basis for W.

Standard S4. Mark:

Let W be the subspace of \mathcal{P}_3 given by $W = \text{span}\left(\left\{x^3 - x^2 + 3x - 3, 2x^3 + x + 1, 3x^3 - x^2 + 4x - 2, x^3 + x^2 + x - 7\right\}\right)$. Compute the dimension of W.

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Version 4 Fall 2017 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.

Standard V	Mark					
Determine if $\begin{bmatrix} 0 \\ -1 \\ 2 \\ 6 \end{bmatrix}$	can be wri	tten as a linear combination of the vectors	$\begin{bmatrix} 3 \\ -1 \\ -1 \\ 0 \end{bmatrix}$	and	$\begin{bmatrix} -1\\0\\1\\2 \end{bmatrix}.$	•

Standard S1.	Mark:			
Determine if the vectors	$\begin{bmatrix} 1 \\ 1 \\ -1 \end{bmatrix},$	$\begin{bmatrix} 3 \\ -1 \\ 1 \end{bmatrix}$, and $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$	$\begin{bmatrix} 2 \\ 0 \\ -2 \end{bmatrix}$	are linearly dependent or linearly independent

Standard S3.

$$\begin{bmatrix}
\begin{bmatrix} 1 \\ -1 \\ 3 \\ -3 \end{bmatrix}, \begin{bmatrix} 2 \\ 0 \\ 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 3 \\ -1 \\ 4 \\ -2 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \\ 1 \\ -7 \end{bmatrix}
\end{bmatrix}$$
Let $W = \text{span}\left(\left\{\begin{bmatrix} 1 \\ -1 \\ 3 \\ -3 \end{bmatrix}, \begin{bmatrix} 2 \\ 0 \\ 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 3 \\ -1 \\ 4 \\ -2 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \\ 1 \\ -7 \end{bmatrix}\right\}\right)$. Find a basis of W .

Standard S4.
$$\begin{bmatrix} & & & & \\ & &$$

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Version 5

Math 237 – Linear Algebra Fall 2017

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.

Determine if
$$\begin{bmatrix} 0 \\ -1 \\ 6 \\ -7 \end{bmatrix}$$
 belongs to the span of the set $\left\{ \begin{bmatrix} 2 \\ 0 \\ -1 \\ 5 \end{bmatrix}, \begin{bmatrix} 4 \\ -1 \\ 4 \\ 3 \end{bmatrix} \right\}$.

Standard S1.
$$\begin{bmatrix} 1 \\ 1 \\ -1 \end{bmatrix}, \begin{bmatrix} 3 \\ -1 \\ 1 \end{bmatrix}, \text{ and } \begin{bmatrix} 2 \\ 0 \\ -2 \end{bmatrix} \text{ are linearly dependent or linearly independent}$$

Standard S3.

Mark:

Let W be the subspace of \mathcal{P}_2 given by $W = \text{span}\left(\left\{-3x^2 - 8x, x^2 + 2x + 2, -x + 3\right\}\right)$. Find a basis for W.

Standard S4. $\begin{bmatrix} & & & \\ & & & & \\ & &$

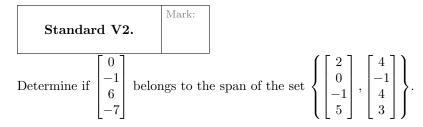
 ${\bf Additional\ Notes/Marks}$

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Version 6

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.



Standard S1.

Mark:

Determine if the set of matrices $\left\{ \begin{bmatrix} 3 & -1 \\ 0 & 4 \end{bmatrix}, \begin{bmatrix} 1 & 2 \\ -2 & 1 \end{bmatrix}, \begin{bmatrix} 3 & -8 \\ 6 & 5 \end{bmatrix} \right\}$ is linearly dependent or linearly

independent.

Standard S3.
$$\begin{bmatrix} & & & & \\ & & & & \\ & & & \\ & & & \end{bmatrix}$$
 Let $W = \operatorname{span}\left(\left\{\begin{bmatrix} -3 \\ -8 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ 2 \\ 2 \end{bmatrix}, \begin{bmatrix} 0 \\ -1 \\ 3 \end{bmatrix}\right\}\right)$. Find a basis for W .

Let
$$W = \operatorname{span}\left(\left\{\begin{bmatrix}2\\0\\-2\\0\end{bmatrix},\begin{bmatrix}3\\1\\3\\6\end{bmatrix},\begin{bmatrix}0\\0\\1\\1\end{bmatrix},\begin{bmatrix}1\\2\\0\\1\end{bmatrix}\right\}\right)$$
. Compute the dimension of W .