Name:	
J#:	Dr. Clontz
Date:	

Math 237 – Linear Algebra Fall 2017

Version 1

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.

Let V be the set of all points on the line x + y = 2 with the operations, for any $(x_1, y_1), (x_2, y_2) \in V$, $c \in \mathbb{R}$,

$$(x_1, y_1) \oplus (x_2, y_2) = (x_1 + x_2 - 1, y_1 + y_2 - 1)$$

 $c \odot (x_1, y_1) = (cx_1 - (c - 1), cy_1 - (c - 2))$

Standard V3.

Mark:

$$\begin{bmatrix} 1 \\ 0 \\ 2 \\ 1 \end{bmatrix}, \begin{bmatrix} 3 \\ 1 \\ 0 \\ -3 \end{bmatrix}, \begin{bmatrix} 0 \\ 3 \\ 0 \\ -2 \end{bmatrix}, \text{ and } \begin{bmatrix} -1 \\ 1 \\ -1 \\ -1 \end{bmatrix} \text{ span } \mathbb{R}^4.$$

Standard V4.	Mark:
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Let W be the set of all 2 by 2 matrices which are not invertible. Determine if W is a subspace of $M_{2,2}$.

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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.

Let V be the set of all real numbers together with the operations \oplus and \odot defined by, for any $x,y\in V$ and $c\in\mathbb{R}$,

$$x \oplus y = x + y - 3$$
$$c \odot x = cx - 3(c - 1)$$

Standard V3.	Mark:		
Determine if the vectors	$ \begin{bmatrix} 8 \\ 21 \\ -7 \end{bmatrix}, $	$\begin{bmatrix} -3 \\ -8 \\ 3 \end{bmatrix}, \begin{bmatrix} -1 \\ -3 \\ 2 \end{bmatrix}, $ and	$\begin{bmatrix} 4\\11\\-5 \end{bmatrix} \operatorname{span} \mathbb{R}^3$

Standard V4.	Standard V4.	Mark:
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Let W be the set of all polynomials of even degree. Determine if W is a subspace of the vector space of all polynomials.

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Version 3

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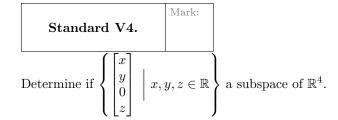
Let V be the set of all real numbers together with the operations \oplus and \odot defined by, for any $x,y\in V$ and $c\in\mathbb{R}$,

$$x \oplus y = x + y - 3$$
$$c \odot x = cx - 3(c - 1)$$

Standard V3.

Mark:

$$\begin{bmatrix} 1 \\ 0 \\ 2 \\ 1 \end{bmatrix}, \begin{bmatrix} 3 \\ 1 \\ 0 \\ -3 \end{bmatrix}, \begin{bmatrix} 0 \\ 3 \\ 0 \\ -2 \end{bmatrix}, \text{ and } \begin{bmatrix} -1 \\ 1 \\ -1 \\ -1 \end{bmatrix} \text{ span } \mathbb{R}^4.$$



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Version 4

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.

Let V be the set of all points on the line x + y = 2 with the operations, for any $(x_1, y_1), (x_2, y_2) \in V$, $c \in \mathbb{R}$,

$$(x_1, y_1) \oplus (x_2, y_2) = (x_1 + x_2 - 1, y_1 + y_2 - 1)$$

 $c \odot (x_1, y_1) = (cx_1 - (c - 1), cy_1 - (c - 2))$

Standard V3.

Mark:

Determine if the vectors
$$\begin{bmatrix} -3\\1\\1 \end{bmatrix}$$
, $\begin{bmatrix} 5\\-1\\-2 \end{bmatrix}$, $\begin{bmatrix} 2\\0\\-1 \end{bmatrix}$, and $\begin{bmatrix} 0\\2\\-1 \end{bmatrix}$ span \mathbb{R}^3

Standard V4.	Standard V4.	Mark:
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Let W be the set of all polynomials of even degree. Determine if W is a subspace of the vector space of all polynomials.

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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.

Let V be the set of all points on the line x + y = 2 with the operations, for any $(x_1, y_1), (x_2, y_2) \in V$, $c \in \mathbb{R}$,

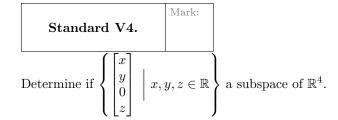
$$(x_1, y_1) \oplus (x_2, y_2) = (x_1 + x_2 - 1, y_1 + y_2 - 1)$$

 $c \odot (x_1, y_1) = (cx_1 - (c - 1), cy_1 - (c - 2))$

Standard V3.

Mark:

Determine if the vectors
$$\begin{bmatrix} -3\\1\\1 \end{bmatrix}$$
, $\begin{bmatrix} 5\\-1\\-2 \end{bmatrix}$, $\begin{bmatrix} 2\\0\\-1 \end{bmatrix}$, and $\begin{bmatrix} 0\\2\\-1 \end{bmatrix}$ span \mathbb{R}^3



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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.

Let V be the set of all real numbers together with the operations \oplus and \odot defined by, for any $x,y\in V$ and $c\in\mathbb{R}$,

$$x \oplus y = x + y - 3$$
$$c \odot x = cx - 3(c - 1)$$

Standard V3.

Mark:

$$\begin{bmatrix} 1 \\ 0 \\ 2 \\ 1 \end{bmatrix}, \begin{bmatrix} 3 \\ 1 \\ 0 \\ -3 \end{bmatrix}, \begin{bmatrix} 0 \\ 3 \\ 0 \\ -2 \end{bmatrix}, \text{ and } \begin{bmatrix} -1 \\ 1 \\ -1 \\ -1 \end{bmatrix} \text{ span } \mathbb{R}^4.$$

Standard V4.	Mark:
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Let W be the set of all 2 by 2 matrices which are not invertible. Determine if W is a subspace of $M_{2,2}$.