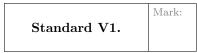
Name:	
J#:	Dr. Clontz
Date:	

MASTERY QUIZ DAY 14

Math 237 – Linear Algebra Fall 2017

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 real numbers with the operations, for any $x, y \in V$, $c \in \mathbb{R}$,

$$x \oplus y = \sqrt{x^2 + y^2}$$
$$c \odot x = cx$$

- (a) Show that the vector addition \oplus is associative: $x \oplus (y \oplus z) = (x \oplus y) \oplus z$.
- (b) Determine if V is a vector space or not. Justify your answer.

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

Standard V4.	ark:
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Determine if the set of all lattice points, i.e. $\{(x,y) \mid x \text{ and } y \text{ are integers}\}$ is a subspace of \mathbb{R}^2 .

Standard S2.

Mark:

Determine if the set $\{x^3 - 3x^2 + 2x + 2, -x^3 + 4x^2 - x + 1, -x^3 + 2x + 1, 3x^2 + 3x + 9\}$ is a basis of \mathcal{P}^3 or not.

Additional Notes/Marks