Name:	
J#:	Dr. Clontz
Date:	

## MASTERY QUIZ DAY 12

Math 237 – Linear Algebra Fall 2017

## Version 4

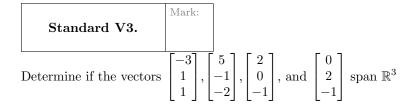
Show all work. Answers without work will not receive credit. You may use a calculator, but you must show all relevant work to receive credit for a standard.

Let V be the set of all polynomials with the operations, for any  $f,g\in V,\,c\in\mathbb{R},$ 

$$f \oplus g = f' + g'$$
$$c \odot f = cf'$$

(here f' denotes the derivative of f).

- (a) Show that scalar multiplication **distributes scalars** over vector addition:  $c \odot (f \oplus g) = c \odot f \oplus c \odot g$ .
- (b) Determine if V is a vector space or not. Justify your answer.



Mark: Standard V4.

Let W be the set of all  $\mathbb{R}^3$  vectors  $\begin{bmatrix} x \\ y \\ z \end{bmatrix}$  satisfying x+y+z=0 (this forms a plane). Determine if W is a subspace of  $\mathbb{R}^3$ .

 ${\bf Additional\ Notes/Marks}$