Name:
J#:
Date:

Dr. Clontz

MASTERY QUIZ DAY 22 Math 237 – Linear Algebra
Version 1 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 A1.	Mark:

Let $T:\mathbb{R}^3\to\mathbb{R}$ be the linear transformation given by

$$T\left(\begin{bmatrix}x_1\\x_2\\x_3\end{bmatrix}\right)=\begin{bmatrix}x_3+3x_1\end{bmatrix}.$$

Write the matrix for T with respect to the standard bases of $\mathbb{R}^3$ and $\mathbb{R}$.

Solution:

$$\begin{bmatrix}3 & 0 & 1\end{bmatrix}$$

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Standard A2.	Mark:

Determine if the map $T:\mathcal{P}^3\to\mathcal{P}^4$ given by $T(f(x))=xf(x)-f(x)$ is a linear transformation or not.

Standard M1.	Mark:

Let

$$C=\begin{bmatrix}2 & 3\\0 & 1\end{bmatrix} \qquad D=\begin{bmatrix}3 & 1 & 0\end{bmatrix} \qquad E=\begin{bmatrix}2 & 0\\0 & -1\\1 & -1\end{bmatrix}$$

Determine which of the six products CD, CE, DC, DE, EC, ED can be computed, and compute them.

Solution:

$$EC=\begin{bmatrix}4 & 6\\0 & -1\\2 & 2\end{bmatrix}$$
$$DE=\begin{bmatrix}6 & -1\end{bmatrix}$$

□

Additional Notes/Marks	