Name:	
J#:	Dr. Clontz
Date:	

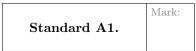
## **MASTERY QUIZ DAY 22**

Math 237 – Linear Algebra

## 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.



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:

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

Standard A2.

Mark:

Determine if the map  $T: \mathcal{P}^6 \to \mathcal{P}^6$  given by T(f) = f(x) - f(0) is a linear transformation or not.

Standard M1.	Mark:

Let

$$A = \begin{bmatrix} 0 & 0 & -1 & -1 \\ 1 & 3 & 7 & 2 \end{bmatrix} \qquad B = \begin{bmatrix} 0 & 1 & 7 & 7 \\ -1 & -2 & 0 & 4 \\ 0 & 0 & 1 & 5 \end{bmatrix} \qquad C = \begin{bmatrix} 3 & 2 \\ 0 & 1 \\ -2 & -1 \end{bmatrix}$$

Exactly one of the six products AB, AC, BA, BC, CA, CB can be computed. Determine which one, and compute it.

**Solution:** CA is the only one that can be computed, and

$$CA = \begin{bmatrix} 2 & 6 & 11 & 1 \\ 1 & 3 & 7 & 2 \\ -1 & -3 & -5 & 0 \end{bmatrix}$$

Additional Notes/Marks