☞ Quiz: Sections 6.1 & 6.2 | Linear Algebra MATH 310 | November 29, 2018

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Directions: Please answer in the space provided. No calculators. Please put all phones, etc., away.

1. Suppose T is a linear transformation defined as $T(\mathbf{x}) = A\mathbf{x}$, where $A = \begin{bmatrix} 5 & -3 \\ 1 & 1 \\ 1 & -1 \end{bmatrix}$.

   (a) State the domain of T.

   (b) State the codomain of T.

   (c) Find the kernel of T.

   (d) Find the range of T.

   (e) nullity(T) =

   (f) rank(T) =

   (g) Is T one-to-one?

   (h) Is T onto?

2. Suppose $S : P_2 \to P_2$ is a linear transformation for which $S(1) = x - x^2$, $S(x) = 1 + x + 3x^2$ and $S(x^2) = 4$. Find $S(3 - x + 2x^2)$.