

QUIZ November 17, 2013

Clicker Instructions: A = True; B = False;
C = I don't know; D = No truth value
correct = 1pt; don't know = 0pt; wrong = 0pt

1. Let

$$A = \begin{bmatrix} 2 & 0 \\ 1 & 1 \end{bmatrix}.$$

Consider a basis

$$\mathcal{B} : \begin{pmatrix} 1 \\ 1 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \end{pmatrix}.$$

Then the transformation T_A , when expressed in terms of the basis \mathcal{B} is

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

2. Let V be a vector space. For any transformation $T : V \rightarrow V$ and any vector $\mathbf{v} \in V$, and any basis \mathcal{B} for V , we have

$$[T(\mathbf{v})]_{\mathcal{B}} = [T]_{\mathcal{B}}[\mathbf{v}]_{\mathcal{B}}.$$

3. Let V be a vector space with two bases, \mathcal{B} and \mathcal{C} . Suppose $P = P_{\mathcal{C} \leftarrow \mathcal{B}}$ is a change of basis matrix from \mathcal{B} to \mathcal{C} . Suppose that $A = [T]_{\mathcal{B}}$ is a matrix representing transformation $T : V \rightarrow V$ in terms of basis \mathcal{B} . Suppose that $D = [T]_{\mathcal{C}}$ is a matrix representing transformation $T : V \rightarrow V$ in terms of basis \mathcal{C} . Then

$$D = P^{-1}AP.$$