

代幾 I 計算演習 [問題] (2007/06/28)

問. 次の様な変換を行う線型変換 T に対応する行列を求めなさい

Q.1

$$T\left(\begin{pmatrix} 3 \\ 3 \end{pmatrix}\right) = \begin{pmatrix} -18 \\ 3 \end{pmatrix}, T\left(\begin{pmatrix} 3 \\ 2 \end{pmatrix}\right) = \begin{pmatrix} -15 \\ 2 \end{pmatrix}$$

Q.2

$$T\left(\begin{pmatrix} 0 \\ -2 \end{pmatrix}\right) = \begin{pmatrix} 4 \\ 2 \end{pmatrix}, T\left(\begin{pmatrix} 2 \\ 1 \end{pmatrix}\right) = \begin{pmatrix} -6 \\ 3 \end{pmatrix}$$

Q.3

$$T\left(\begin{pmatrix} -2 \\ -1 \end{pmatrix}\right) = \begin{pmatrix} -1 \\ 7 \end{pmatrix}, T\left(\begin{pmatrix} -1 \\ 3 \end{pmatrix}\right) = \begin{pmatrix} -11 \\ -7 \end{pmatrix}$$

Q.4

$$T\left(\begin{pmatrix} -3 \\ -2 \end{pmatrix}\right) = \begin{pmatrix} -11 \\ 0 \end{pmatrix}, T\left(\begin{pmatrix} -2 \\ -3 \end{pmatrix}\right) = \begin{pmatrix} -9 \\ -5 \end{pmatrix}$$

Q.5

$$T\left(\begin{pmatrix} 2 \\ 4 \end{pmatrix}\right) = \begin{pmatrix} 0 \\ -8 \end{pmatrix}, T\left(\begin{pmatrix} 3 \\ -2 \end{pmatrix}\right) = \begin{pmatrix} 8 \\ 20 \end{pmatrix}$$

Q.6

$$T\left(\begin{pmatrix} 2 \\ 4 \end{pmatrix}\right) = \begin{pmatrix} -18 \\ 14 \end{pmatrix}, T\left(\begin{pmatrix} -1 \\ 4 \end{pmatrix}\right) = \begin{pmatrix} -15 \\ 17 \end{pmatrix}$$

Q.7

$$T\left(\begin{pmatrix} 3 \\ 1 \end{pmatrix}\right) = \begin{pmatrix} -10 \\ 3 \end{pmatrix}, T\left(\begin{pmatrix} -3 \\ -3 \end{pmatrix}\right) = \begin{pmatrix} 18 \\ -9 \end{pmatrix}$$

Q.8

$$T\left(\begin{pmatrix} -3 \\ 2 \end{pmatrix}\right) = \begin{pmatrix} -9 \\ 12 \end{pmatrix}, T\left(\begin{pmatrix} 3 \\ 3 \end{pmatrix}\right) = \begin{pmatrix} 9 \\ 3 \end{pmatrix}$$

Q.9

$$T\left(\begin{pmatrix} 3 \\ -1 \end{pmatrix}\right) = \begin{pmatrix} -3 \\ 11 \end{pmatrix}, T\left(\begin{pmatrix} -3 \\ 2 \end{pmatrix}\right) = \begin{pmatrix} 0 \\ -13 \end{pmatrix}$$

Q.10

$$T\left(\begin{pmatrix} -1 \\ 2 \end{pmatrix}\right) = \begin{pmatrix} 12 \\ 5 \end{pmatrix}, T\left(\begin{pmatrix} -3 \\ -2 \end{pmatrix}\right) = \begin{pmatrix} 4 \\ -1 \end{pmatrix}$$

Q.11

$$T\left(\begin{pmatrix} -3 \\ 3 \end{pmatrix}\right) = \begin{pmatrix} 9 \\ 0 \end{pmatrix}, T\left(\begin{pmatrix} -2 \\ -3 \end{pmatrix}\right) = \begin{pmatrix} -9 \\ -5 \end{pmatrix}$$

Q.12

$$T\left(\begin{pmatrix} 4 \\ 0 \end{pmatrix}\right) = \begin{pmatrix} -12 \\ -4 \end{pmatrix}, T\left(\begin{pmatrix} 4 \\ 3 \end{pmatrix}\right) = \begin{pmatrix} -21 \\ -1 \end{pmatrix}$$

Q.13

$$T\left(\begin{pmatrix} -3 \\ -3 \end{pmatrix}\right) = \begin{pmatrix} -6 \\ -12 \end{pmatrix}, T\left(\begin{pmatrix} 0 \\ -2 \end{pmatrix}\right) = \begin{pmatrix} -2 \\ -4 \end{pmatrix}$$

Q.14

$$T\left(\begin{pmatrix} 3 \\ -1 \end{pmatrix}\right) = \begin{pmatrix} 12 \\ 9 \end{pmatrix}, T\left(\begin{pmatrix} -1 \\ 4 \end{pmatrix}\right) = \begin{pmatrix} -4 \\ 8 \end{pmatrix}$$

Q.15

$$T\left(\begin{pmatrix} 2 \\ 1 \end{pmatrix}\right) = \begin{pmatrix} 11 \\ -4 \end{pmatrix}, T\left(\begin{pmatrix} 0 \\ -1 \end{pmatrix}\right) = \begin{pmatrix} -3 \\ -4 \end{pmatrix}$$

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A.1

$$\begin{pmatrix} -3 & -3 \\ 0 & 1 \end{pmatrix}$$

A.9

$$\begin{pmatrix} -2 & -3 \\ 3 & -2 \end{pmatrix}$$

A.2

$$\begin{pmatrix} -2 & -2 \\ 2 & -1 \end{pmatrix}$$

A.10

$$\begin{pmatrix} -4 & 4 \\ -1 & 2 \end{pmatrix}$$

A.3

$$\begin{pmatrix} 2 & -3 \\ -2 & -3 \end{pmatrix}$$

A.11

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

A.4

$$\begin{pmatrix} 3 & 1 \\ -2 & 3 \end{pmatrix}$$

A.12

$$\begin{pmatrix} -3 & -3 \\ -1 & 1 \end{pmatrix}$$

A.5

$$\begin{pmatrix} 2 & -1 \\ 4 & -4 \end{pmatrix}$$

A.13

$$\begin{pmatrix} 1 & 1 \\ 2 & 2 \end{pmatrix}$$

A.6

$$\begin{pmatrix} -1 & -4 \\ -1 & 4 \end{pmatrix}$$

A.14

$$\begin{pmatrix} 4 & 0 \\ 4 & 3 \end{pmatrix}$$

A.7

$$\begin{pmatrix} -2 & -4 \\ 0 & 3 \end{pmatrix}$$

A.15

$$\begin{pmatrix} 4 & 3 \\ -4 & 4 \end{pmatrix}$$

A.8

$$\begin{pmatrix} 3 & 0 \\ -2 & 3 \end{pmatrix}$$