WebAssign
CH 1.4 (Homework)

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MA 265 Spring 2013, section 132, Spring 2013
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Current Score : 20 / 20 **Due :** Thursday, January 24 2013 11:40 PM EST

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1. 4/4 points | Previous Answers KolmanLinAlg9 1.4.008.

Let $A = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}$.

(a) Determine a simple expression for A^2.

$$\begin{bmatrix} \checkmark & \checkmark \\ \checkmark & \checkmark \end{bmatrix}$$

(b) Determine a simple expression for A^3.

$$\begin{bmatrix} \checkmark & \checkmark \\ \checkmark & \checkmark \end{bmatrix}$$

(c) Conjecture the form of a simple expression for A^k, k a positive integer.

$$\begin{bmatrix} \checkmark & \checkmark \\ \checkmark & \checkmark \end{bmatrix}$$

(d) Prove or disprove your conjecture in part (c).

- (•) The conjecture proves true. ✓
- ( ) The conjecture does not prove true.

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2. 4/4 points | Previous Answers KolmanLinAlg9 1.4.010.

Find a 2×2 matrix A such that $A^2 = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ and $A \neq I_2$.

$$A = \begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$$ ✓

3. 4/4 points | Previous Answers KolmanLinAlg9 1.4.012.

Find a 2 × 2 matrix A such that $A^2 = O$ and $A \neq O$.

$A =$ [1] [1] / [−1] [−1]

4. 4/4 points | Previous Answers KolmanLinAlg9 1.4.022.

Determine a scalar r such that $A\mathbf{x} = r\mathbf{x}$, where

$$A = \begin{bmatrix} 5 & 3 \\ 3 & 5 \end{bmatrix} \text{ and } \mathbf{x} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}.$$

$r =$ 8

5. 4/4 points | Previous Answers KolmanLinAlg9 1.4.032.

Find three 2 × 2 matrices, A, B, and C such that $AB = AC$ with $B \neq C$ and $A \neq O$. (Enter each matrix in the form [[row 1], [row 2], ...], where each row is a comma-separated list.)

$(A, B, C) =$ ([[0, 1],[0, 0]], [[0, 2],[0, 0]], [[0, 3],[0, 0]])