

WebAssign
CH 7.2 (Homework)

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MA 265 Spring 2013, section 132, Spring 2013
Instructor: Alexandre Eremenko

Current Score : 20 / 20 **Due :** Thursday, April 11 2013 11:40 PM EDT

The due date for this assignment is past. Your work can be viewed below, but no changes can be made.

Important! Before you view the answer key, decide whether or not you plan to request an extension. Your Instructor may *not* grant you an extension if you have viewed the answer key. Automatic extensions are not granted if you have viewed the answer key.

[Request Extension](#) [View Key](#)

1. 4/4 points | [Previous Answers](#)

KolmanLinAlg9 7.2.006.

Which of the following matrices are diagonalizable?

(a)
$$\begin{bmatrix} 1 & 4 \\ 1 & -2 \end{bmatrix}$$

- ☒ diagonalizable
☐ not diagonalizable



(b)
$$\begin{bmatrix} 1 & 0 \\ -7 & 1 \end{bmatrix}$$

- ☐ diagonalizable
☒ not diagonalizable



(c)
$$\begin{bmatrix} 1 & 1 & -2 \\ 4 & 0 & 4 \\ 1 & -1 & 4 \end{bmatrix}$$

- ☒ diagonalizable
☐ not diagonalizable



(d)
$$\begin{bmatrix} 1 & 2 & 3 \\ 0 & -1 & 2 \\ 0 & 0 & 2 \end{bmatrix}$$

- ☒ diagonalizable
☐ not diagonalizable



2. 4/4 points | [Previous Answers](#)

KolmanLinAlg9 7.2.007.

Which of the following matrices are diagonalizable?

(a)
$$\begin{bmatrix} 5 & 1 & 0 \\ 0 & 5 & 1 \\ 0 & 0 & 5 \end{bmatrix}$$

- ☐ diagonalizable
☒ not diagonalizable



(b)
$$\begin{bmatrix} -2 & 3 \\ 6 & 1 \end{bmatrix}$$

- ☒ diagonalizable
☐ not diagonalizable



(c)
$$\begin{bmatrix} 3 & 0 & 3 \\ 0 & 1 & 0 \\ 0 & 1 & 3 \end{bmatrix}$$

- ☐ diagonalizable
☒ not diagonalizable



(d)
$$\begin{bmatrix} 2 & 3 & 3 & 5 \\ 3 & 2 & 2 & 3 \\ 0 & 0 & 3 & 2 \\ 0 & 0 & 0 & 3 \end{bmatrix}$$

- ☐ diagonalizable
☒ not diagonalizable



3. 4/4 points | [Previous Answers](#)

KolmanLinAlg9 7.2.008.

Find a 2×2 nondiagonal matrix whose eigenvalues are 5 and -6 , and associated eigenvectors are

$\begin{bmatrix} -1 \\ 2 \end{bmatrix}$ and $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$, respectively.



4. 4/4 points | [Previous Answers](#)

KolmanLinAlg9 7.2.010.

For each of the following matrices, find, if possible, a nonsingular matrix P such that $P^{-1}AP$ is diagonal. (If an answer does not exist, enter DNE into any cell of the matrix.)

(a)
$$\begin{bmatrix} 4 & 2 & 3 \\ 2 & 1 & 2 \\ -1 & -2 & 0 \end{bmatrix}$$

$P =$

dne



(b)
$$\begin{bmatrix} 2 & 1 & 2 \\ 0 & 2 & 0 \\ 0 & 1 & 4 \end{bmatrix}$$

$P =$

1
0
0

0
-2
1

1
0
1



(c)
$$\begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 0 \\ 2 & 1 & 2 \end{bmatrix}$$

$P =$

1
-6
4

-3
0
2

1
0
1



(d)
$$\begin{bmatrix} 0 & -1 \\ 5 & 6 \end{bmatrix}$$

$P =$

1
-1

1
-5



5. 4/4 points | [Previous Answers](#)

KolmanLinAlg9 7.2.011.

For each of the following matrices find, if possible, a nonsingular matrix P such that $P^{-1}AP$ is diagonal. (If an answer does not exist, enter DNE into any cell of the matrix.)

(a)
$$\begin{bmatrix} 5 & -2 & 1 \\ 0 & 4 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$P =$

1
0
-5

2
1
0

1
0
0



(b)
$$\begin{bmatrix} 5 & 5 & 5 \\ 5 & 5 & 5 \\ 5 & 5 & 5 \end{bmatrix}$$

$P =$

-1
1
0

-1
0
1

1
1
1



(c)
$$\begin{bmatrix} 2 & 0 & 0 \\ 2 & 2 & 0 \\ 0 & 0 & 2 \end{bmatrix}$$

$P =$

dne



(d)
$$\begin{bmatrix} 4 & 0 & 1 \\ 0 & 4 & 0 \\ 0 & 1 & 2 \end{bmatrix}$$

$P =$

dne

