

# WebAssign

## CH 4.7 (Homework)

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

Current Score : 20 / 20 Due : Thursday, March 7 2013 11:40 PM EST

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. 2.5/2.5 points | [Previous Answers](#)

KolmanLinAlg9 4.7.005.

Find a basis for the solution space of the given homogeneous system. (If there is no basis, enter NONE in any single cell.)

$$x_1 + 2x_2 - x_3 + 3x_4 = 0$$

$$2x_1 + 2x_2 - x_3 + 4x_4 = 0$$

$$x_1 + 3x_3 + 3x_4 = 0$$






Find the dimension of the solution space.



2. 2.5/2.5 points | [Previous Answers](#)

KolmanLinAlg9 4.7.006.

Find a basis for the solution space of the given homogeneous system. (If there is no basis, enter NONE in any single cell.)

$$x_1 - x_2 + 2x_3 + 3x_4 + 8x_5 = 0$$

$$-x_1 + 2x_2 + 3x_3 + 4x_4 + 6x_5 = 0$$

$$x_1 - x_2 + 3x_3 + 5x_4 + 5x_5 = 0$$

$$3x_1 - 4x_2 + x_3 + 2x_4 + 4x_5 = 0$$







Find the dimension of the solution space.



3. 2.5/2.5 points | [Previous Answers](#)

KolmanLinAlg9 4.7.007.

Find a basis for the solution space of the given homogeneous system. (If there is no basis, enter NONE in any single cell.)

$$\begin{bmatrix} 1 & 2 & 1 & 2 & 1 \\ 1 & 2 & 2 & 1 & 2 \\ 2 & 4 & 3 & 3 & 3 \\ 0 & 0 & 1 & -1 & -1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$$

-2	-3
1	0
0	1
0	1
0	0



Find the dimension of the solution space.

4. 2.5/2.5 points | [Previous Answers](#)

KolmanLinAlg9 4.7.008.

Find a basis for the solution space of the given homogeneous system. (If there is no basis, enter NONE in any single cell.)

$$\begin{bmatrix} 1 & 0 & 3 \\ 2 & 1 & 1 \\ 3 & 1 & 3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$$

none



Find the dimension of the solution space.

5. 2.5/2.5 points | [Previous Answers](#)

KolmanLinAlg9 4.7.010.

Find a basis for the solution space of the given homogeneous system. (If there is no basis, enter NONE in any single cell.)

$$\begin{bmatrix} 1 & 2 & -3 & -2 & 1 & 9 \\ 1 & 2 & -4 & 3 & 3 & 5 \\ -2 & -4 & 6 & 4 & -3 & 6 \\ 0 & 0 & -1 & 5 & 1 & 7 \\ 1 & 2 & -3 & -2 & 0 & 8 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \\ x_6 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$$

-2	17
1	0
0	5
0	1
0	0
0	0



Find the dimension of the solution space.

6. 2.5/2.5 points | [Previous Answers](#)

KolmanLinAlg9 4.7.011.

Find a basis for the null space of the given matrix A.

$$A = \begin{bmatrix} 2 & 2 & 3 & -1 \\ 1 & 3 & 2 & 0 \\ 3 & 4 & 1 & 1 \\ 2 & 1 & -1 & 1 \end{bmatrix}$$

0
-2/5
3/5
1



7. 2.5/2.5 points | [Previous Answers](#)

KolmanLinAlg9 4.7.012.

Find a basis for the null space of the given matrix  $A$ .

$$A = \begin{bmatrix} 1 & -1 & 2 & 1 & 0 \\ 2 & 0 & 5 & -1 & 3 \\ 5 & -1 & 3 & 0 & 3 \\ 4 & -2 & 1 & 1 & 3 \\ 1 & 3 & -4 & -5 & 6 \end{bmatrix}$$

8. 2.5/2.5 points | [Previous Answers](#)

Let

$$A = \begin{bmatrix} 1 & 1 & -5 \\ -3 & -3 & 15 \\ -1 & -1 & 5 \end{bmatrix}.$$

(a) Find the set of all solutions to  $A\mathbf{x} = \mathbf{0}$ . (Use the parameters  $x$ ,  $y$ , and  $z$  as necessary.)

$$(x, y, z) = \left( \quad \quad \quad \right)$$

(b) Express each solution as a linear combination of two vectors,  $\mathbf{x} = y\mathbf{x}_1 + z\mathbf{x}_2$ , in  $R^3$ .

$$\mathbf{x}_1 = \begin{bmatrix} -1 \\ 1 \\ 0 \end{bmatrix} \quad \mathbf{x}_2 = \begin{bmatrix} 5 \\ 0 \\ 1 \end{bmatrix}$$

