

WebAssign

CH 4.6 (Homework)

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MA 265 Spring 2013, section 132, Spring 2013
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Current Score : 20 / 20

Due : Thursday, February 28 2013 11:40 PM EST

1. 3.33/3.33 points | [Previous Answers](#)

KolmanLinAlg9 4.6.002.


Which of the following sets of vectors are bases for R^3 ? (Select all that apply.)

☐
 $\left\{ \begin{bmatrix} 3 \\ 2 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ -1 \end{bmatrix} \right\}$

☐
 $\left\{ \begin{bmatrix} 1 \\ 1 \\ -1 \end{bmatrix}, \begin{bmatrix} 2 \\ 3 \\ 4 \end{bmatrix}, \begin{bmatrix} 4 \\ 1 \\ -1 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ -1 \end{bmatrix} \right\}$

☒
 $\left\{ \begin{bmatrix} 3 \\ 2 \\ 2 \end{bmatrix}, \begin{bmatrix} -1 \\ 4 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix} \right\}$

☐
 $\left\{ \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 6 \\ -1 \end{bmatrix}, \begin{bmatrix} 3 \\ 4 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix} \right\}$



2. 3.33/3.33 points | [Previous Answers](#)

KolmanLinAlg9 4.6.003.

Which of the following sets of vectors are bases for R_4 ? (Select all that apply.)

- ☒ $\left\{ \begin{bmatrix} 1 \\ 0 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \\ 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 1 \\ 1 \end{bmatrix} \right\}$
- ☐ $\left\{ \begin{bmatrix} 1 \\ 1 \\ 0 \\ 5 \end{bmatrix}, \begin{bmatrix} 3 \\ 1 \\ 2 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 0 \\ 1 \end{bmatrix} \right\}$
- ☐ $\left\{ \begin{bmatrix} -2 \\ 4 \\ 6 \\ 4 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 5 \\ 0 \end{bmatrix}, \begin{bmatrix} 7 \\ 1 \\ 2 \\ 3 \end{bmatrix}, \begin{bmatrix} 2 \\ 7 \\ 3 \\ 2 \end{bmatrix}, \begin{bmatrix} 5 \\ 6 \\ 7 \\ 2 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 4 \end{bmatrix} \right\}$
- ☒ $\left\{ \begin{bmatrix} 0 \\ 0 \\ 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 7 \\ 1 \\ 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 2 \\ 1 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} 2 \\ 1 \\ 5 \\ 4 \end{bmatrix} \right\}$

3. 3.33/3.33 points | [Previous Answers](#)

KolmanLinAlg9 4.6.007.

Determine which of the given subsets forms a basis for R^3 . Express the vector

$$\begin{bmatrix} 6 \\ 1 \\ 3 \end{bmatrix}$$

as a linear combination of the vectors in each subset that is a basis. (If not a basis, enter NA into each answer blank.)

(a) $\left\{ \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 6 \\ 3 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix} \right\}$

$$\begin{bmatrix} 6 \\ 1 \\ 3 \end{bmatrix} = \boxed{7.5} \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} + \boxed{-1.5} \begin{bmatrix} 1 \\ 6 \\ 3 \end{bmatrix} + \boxed{2.5} \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}$$

(b) $\left\{ \begin{bmatrix} 1 \\ 6 \\ 3 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \\ 3 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} \right\}$

$$\begin{bmatrix} 6 \\ 1 \\ 3 \end{bmatrix} = \boxed{\text{NA}} \begin{bmatrix} 1 \\ 6 \\ 3 \end{bmatrix} + \boxed{\text{NA}} \begin{bmatrix} 1 \\ 1 \\ 3 \end{bmatrix} + \boxed{\text{NA}} \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$$

4. 3.33/3.33 points | [Previous Answers](#)

KolmanLinAlg9 4.6.008.

Determine which of the given subsets forms a basis for R^3 . Express the vector

$$\begin{bmatrix} 2 \\ 1 \\ 3 \end{bmatrix}$$

as a linear combination of the vectors in each subset that is a basis. (If not a basis, enter NA into each answer blank.)

(a) $\left\{ \begin{bmatrix} 2 \\ 1 \\ 3 \end{bmatrix}, \begin{bmatrix} 1 \\ 12 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \\ 4 \end{bmatrix}, \begin{bmatrix} 1 \\ 5 \\ 1 \end{bmatrix} \right\}$

$$\begin{bmatrix} 2 \\ 1 \\ 3 \end{bmatrix} = \boxed{\text{NA}} \begin{bmatrix} 2 \\ 1 \\ 3 \end{bmatrix} + \boxed{\text{NA}} \begin{bmatrix} 1 \\ 12 \\ 1 \end{bmatrix} + \boxed{\text{NA}} \begin{bmatrix} 1 \\ 1 \\ 4 \end{bmatrix} + \boxed{\text{NA}} \begin{bmatrix} 1 \\ 5 \\ 1 \end{bmatrix}$$

(b) $\left\{ \begin{bmatrix} 1 \\ 1 \\ 2 \end{bmatrix}, \begin{bmatrix} 12 \\ 12 \\ 0 \end{bmatrix}, \begin{bmatrix} 3 \\ 4 \\ -1 \end{bmatrix} \right\}$

$$\begin{bmatrix} 2 \\ 1 \\ 3 \end{bmatrix} = \boxed{1} \begin{bmatrix} 1 \\ 1 \\ 2 \end{bmatrix} + \boxed{1/3} \begin{bmatrix} 12 \\ 12 \\ 0 \end{bmatrix} + \boxed{-1} \begin{bmatrix} 3 \\ 4 \\ -1 \end{bmatrix}$$

5. 3.33/3.33 points | [Previous Answers](#)

KolmanLinAlg9 4.6.012.

Find a basis for the subspace W of R_4 spanned by the set of vectors

$$\left\{ \begin{bmatrix} 1 & 1 & 0 & -1 \end{bmatrix}, \begin{bmatrix} 0 & 1 & 2 & 1 \end{bmatrix}, \begin{bmatrix} 1 & 0 & 1 & 3 \end{bmatrix}, \begin{bmatrix} 1 & 1 & -6 & -11 \end{bmatrix}, \begin{bmatrix} -1 & -5 & 1 & 12 \end{bmatrix} \right\}.$$

- ☐ $\left\{ \begin{bmatrix} 1 & 1 & 0 & -1 \end{bmatrix}, \begin{bmatrix} -2 & -2 & 3 & 7 \end{bmatrix}, \begin{bmatrix} 0 & 0 & 3 & 5 \end{bmatrix} \right\}$
- ☐ $\left\{ \begin{bmatrix} 1 & 1 & -6 & -11 \end{bmatrix}, \begin{bmatrix} 1 & 1 & 0 & -1 \end{bmatrix}, \begin{bmatrix} -2 & -2 & 3 & 7 \end{bmatrix} \right\}$
- ☐ $\left\{ \begin{bmatrix} 0 & 0 & 3 & 5 \end{bmatrix}, \begin{bmatrix} 1 & 1 & -6 & -11 \end{bmatrix}, \begin{bmatrix} -2 & -2 & 3 & 7 \end{bmatrix} \right\}$
- ☒ $\left\{ \begin{bmatrix} 1 & 1 & 0 & -1 \end{bmatrix}, \begin{bmatrix} 0 & 1 & 2 & 1 \end{bmatrix}, \begin{bmatrix} 0 & 0 & 3 & 5 \end{bmatrix} \right\}$
- ☐ $\left\{ \begin{bmatrix} 1 & 1 & 0 & -1 \end{bmatrix}, \begin{bmatrix} 1 & 1 & -6 & -11 \end{bmatrix}, \begin{bmatrix} 0 & 0 & 3 & 5 \end{bmatrix} \right\}$

What is $\dim W$?

6. 3.35/3.35 points | [Previous Answers](#)

KolmanLinAlg9 4.6.011.

Find a basis for the subspace W of R^3 spanned by

$$\left\{ \begin{bmatrix} 2 \\ 2 \\ 2 \end{bmatrix}, \begin{bmatrix} 3 \\ 2 \\ 1 \end{bmatrix}, \begin{bmatrix} 13 \\ 10 \\ 7 \end{bmatrix}, \begin{bmatrix} 8 \\ 6 \\ 4 \end{bmatrix} \right\}.$$


☐
 $\left\{ \begin{bmatrix} 13 \\ 10 \\ 7 \end{bmatrix}, \begin{bmatrix} 8 \\ 6 \\ 4 \end{bmatrix}, \begin{bmatrix} 2 \\ 2 \\ 2 \end{bmatrix} \right\}$

☒
 $\left\{ \begin{bmatrix} 2 \\ 2 \\ 2 \end{bmatrix}, \begin{bmatrix} 3 \\ 2 \\ 1 \end{bmatrix} \right\}$

☐
 $\left\{ \begin{bmatrix} 13 \\ 10 \\ 7 \end{bmatrix}, \begin{bmatrix} 13 \\ 10 \\ 7 \end{bmatrix}, \begin{bmatrix} 8 \\ 6 \\ 4 \end{bmatrix} \right\}$

☐
 $\left\{ \begin{bmatrix} 8 \\ 6 \\ 4 \end{bmatrix}, \begin{bmatrix} 4 \\ 3 \\ 2 \end{bmatrix} \right\}$

☐
 $\left\{ \begin{bmatrix} 6 \\ 6 \\ 6 \end{bmatrix}, \begin{bmatrix} 2 \\ 2 \\ 2 \end{bmatrix} \right\}$



What is the dimension of W ?
 