

WebAssign
CH 4.4 (Homework)Yinglai Wang
MA 265 Spring 2013, section 132, Spring 2013
Instructor: Alexandre Eremenko**Current Score :** 18.57 / 20**Due :** Thursday, February 28 2013 11:40 PM EST**1.** 1.42/2.85 points | [Previous Answers](#)

KolmanLinAlg9 4.4.004.

In each part, determine whether the given vector A in M_{22} belongs to $\text{span } \{A_1, A_2, A_3\}$, where

$$A_1 = \begin{bmatrix} 1 & -1 \\ 0 & 3 \end{bmatrix}, \quad A_2 = \begin{bmatrix} 1 & 1 \\ 0 & 2 \end{bmatrix}, \quad \text{and} \quad A_3 = \begin{bmatrix} 5 & 5 \\ -1 & 1 \end{bmatrix}.$$

(a) $A = \begin{bmatrix} 8 & 4 \\ -1 & 9 \end{bmatrix}$

☒ Yes☐ No

(b) $A = \begin{bmatrix} -13 & -15 \\ 3 & 2 \end{bmatrix}$

☒ Yes☐ No

(c) $A = \begin{bmatrix} -14 & -14 \\ 3 & 2 \end{bmatrix}$

☒ Yes☐ No

(d) $A = \begin{bmatrix} -9 & -9 \\ 2 & 1 \end{bmatrix}$

☒ Yes☐ No

2. 2.85/2.85 points | [Previous Answers](#)

KolmanLinAlg9 4.4.005.

Which of the following sets of vectors span R_2 ?(a) $\begin{bmatrix} 1 & 4 \end{bmatrix}, \begin{bmatrix} -1 & 1 \end{bmatrix}$

- ☒ spans R_2
- ☐ does not span R_2

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

- ☐ spans R_2
- ☒ does not span R_2

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

- ☒ spans R_2
- ☐ does not span R_2

(d) $\begin{bmatrix} 6 & 12 \end{bmatrix}, \begin{bmatrix} -3 & 6 \end{bmatrix}$

- ☒ spans R_2
- ☐ does not span R_2



3. 2.85/2.85 points | [Previous Answers](#)

KolmanLinAlg9 4.4.006.

Which of the following sets of vectors span R^4 ?

(a) $\left\{ \begin{bmatrix} 1 \\ -1 \\ 5 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 1 \\ 1 \end{bmatrix} \right\}$

- ☐ spans R^4
- ☒ does not span R^4



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

- ☐ spans R^4
- ☒ does not span R^4



(c) $\left\{ \begin{bmatrix} 3 \\ 2 \\ -1 \\ 6 \end{bmatrix}, \begin{bmatrix} 4 \\ 0 \\ 0 \\ 6 \end{bmatrix}, \begin{bmatrix} 3 \\ 2 \\ -1 \\ 6 \end{bmatrix}, \begin{bmatrix} 5 \\ 6 \\ -3 \\ 6 \end{bmatrix}, \begin{bmatrix} 0 \\ 4 \\ -2 \\ -3 \end{bmatrix} \right\}$

- ☐ spans R^4
- ☒ does not span R^4



(d) $\left\{ \begin{bmatrix} 2 \\ 2 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 2 \\ 4 \\ -2 \\ 2 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 2 \\ 2 \end{bmatrix}, \begin{bmatrix} 4 \\ 2 \\ 4 \\ -2 \end{bmatrix} \right\}$

- ☒ spans R^4
- ☐ does not span R^4



4. 2.85/2.85 points | [Previous Answers](#)

KolmanLinAlg9 4.4.007.

Which of the following sets of vectors span R_4 ?(a) $[1 \ 0 \ 0 \ 1], [0 \ 1 \ 0 \ 0], [1 \ 1 \ 1 \ 1], [1 \ 1 \ 1 \ 0]$

- ☒ spans R_4
- ☐ does not span R_4

(b) $[2 \ 4 \ 2 \ 0], [1 \ 1 \ -1 \ 0], [0 \ 0 \ 0 \ 1]$

- ☐ spans R_4
- ☒ does not span R_4

(c) $[3 \ 2 \ -1 \ 2], [2 \ 0 \ 0 \ 1], [3 \ 2 \ -1 \ 2], [5 \ 6 \ -3 \ 2], [0 \ 4 \ -2 \ -1]$

- ☐ spans R_4
- ☒ does not span R_4

(d) $[3 \ 3 \ 0 \ 0], [1 \ 2 \ -1 \ 1], [0 \ 0 \ 3 \ 3], [2 \ 1 \ 2 \ 1]$

- ☒ spans R_4
- ☐ does not span R_4

5. 2.85/2.85 points | [Previous Answers](#)

KolmanLinAlg9 4.4.010.

Does the set

$$S = \left\{ \begin{bmatrix} 1 & 1 \\ 0 & 0 \end{bmatrix}, \begin{bmatrix} 0 & 0 \\ 1 & 1 \end{bmatrix}, \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}, \begin{bmatrix} 0 & 1 \\ 1 & 1 \end{bmatrix} \right\}$$

span M_{22} ?

- ☐ Yes
- ☒ No



6. 2.85/2.85 points | [Previous Answers](#)

KolmanLinAlg9 4.4.012.

Find a set of vectors spanning the null space of

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

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

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

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

☐ $\left\{ \right\}$

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

☐ $\left\{ \right\}$

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



7. 2.9/2.9 points | [Previous Answers](#)

KolmanLinAlg9 4.4.003.

In each part, determine whether the given vector $p(t)$ in P_2 belongs to $\text{span } \{p_1(t), p_2(t), p_3(t)\}$, where

$$p_1(t) = t^2 + 2t + 1, \quad p_2(t) = t^2 + 3, \quad \text{and} \quad p_3(t) = t - 1.$$

(a) $p(t) = t^2 + t + 2$

☒ Yes☐ No

(b) $p(t) = 2t^2 + 2t + 18$

☐ Yes☒ No

(c) $p(t) = -t^2 + t - 8$

☐ Yes☒ No

(d) $p(t) = -2t^2 + 3t + 2$

☐ Yes☒ No