WebAssign
CH 4.1 (Homework)

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MA 265 Spring 2013, section 132, Spring 2013
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Current Score : 20 / 20 **Due :** Thursday, February 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. 2.22/2.22 points | Previous Answers KolmanLinAlg9 4.1.005.

For what values of a and b are the vectors $\begin{bmatrix} a-b \\ 1 \end{bmatrix}$ and $\begin{bmatrix} 5 \\ a+b \end{bmatrix}$ equal?

$a = \boxed{3}$ ✔

$b = \boxed{-2}$ ✔

2. 2.22/2.22 points | Previous Answers KolmanLinAlg9 4.1.006.

For what values of a, b, and c are the vectors $\begin{bmatrix} 2a-b \\ a-2b \\ -8 \end{bmatrix}$ and $\begin{bmatrix} -9 \\ 9 \\ a+b-2c \end{bmatrix}$ equal?

$a = \boxed{-9}$ ✔

$b = \boxed{-9}$ ✔

$c = \boxed{-5}$ ✔

3. 2.22/2.22 points | Previous Answers KolmanLinAlg9 4.1.008.

Determine the components of each vector $\overrightarrow{PQ}$.

(a) $P(-2, 0)$, $Q(-2, -3)$

$$\overrightarrow{PQ} = \begin{bmatrix} 0 \\ -3 \end{bmatrix}$$

✔

(b) $P(2, 1, 3)$, $Q(3, -2, -1)$

$$\overrightarrow{PQ} = \begin{bmatrix} 1 \\ -3 \\ -4 \end{bmatrix}$$

✔

4. 2.22/2.22 points | Previous Answers KolmanLinAlg9 4.1.011.

Compute $\mathbf{u} + \mathbf{v}$, $\mathbf{u} - \mathbf{v}$, $2\mathbf{u}$, and $3\mathbf{u} - 2\mathbf{v}$ if $\mathbf{u}$ and $\mathbf{v}$ are defined as follows.

(a) $\mathbf{u} = \begin{bmatrix} 2 \\ 1 \end{bmatrix}, \mathbf{v} = \begin{bmatrix} -2 \\ 4 \end{bmatrix}$

$\mathbf{u} + \mathbf{v} = \begin{bmatrix} 0 \\ 5 \end{bmatrix}$

$\mathbf{u} - \mathbf{v} = \begin{bmatrix} 4 \\ -3 \end{bmatrix}$

$2\mathbf{u} = \begin{bmatrix} 4 \\ 2 \end{bmatrix}$

$3\mathbf{u} - 2\mathbf{v} = \begin{bmatrix} 10 \\ -5 \end{bmatrix}$

(b) $\mathbf{u} = \begin{bmatrix} 0 \\ 1 \end{bmatrix}, \mathbf{v} = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$

$\mathbf{u} + \mathbf{v} = \begin{bmatrix} 1 \\ 3 \end{bmatrix}$

$\mathbf{u} - \mathbf{v} = \begin{bmatrix} -1 \\ -1 \end{bmatrix}$

$2\mathbf{u} = \begin{bmatrix} 0 \\ 2 \end{bmatrix}$

$3\mathbf{u} - 2\mathbf{v} = \begin{bmatrix} -2 \\ -1 \end{bmatrix}$

(c) $\mathbf{u} = \begin{bmatrix} 2 \\ 1 \end{bmatrix}, \mathbf{v} = \begin{bmatrix} 7 \\ 2 \end{bmatrix}$

$\mathbf{u} + \mathbf{v} = \begin{bmatrix} 9 \\ 3 \end{bmatrix}$

$\begin{bmatrix} -5 \end{bmatrix}$

$\mathbf{u} - \mathbf{v}$ = -1

$2\mathbf{u}$ = 4, 2

$3\mathbf{u} - 2\mathbf{v}$ = -8, -1

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5. 2.22/2.22 points | Previous Answers KolmanLinAlg9 4.1.014.

Let

$$\mathbf{x} = \begin{bmatrix} 4 \\ 2 \end{bmatrix}, \mathbf{y} = \begin{bmatrix} -12 \\ 4 \end{bmatrix}, \mathbf{z} = \begin{bmatrix} r \\ 4 \end{bmatrix}, \text{ and } \mathbf{u} = \begin{bmatrix} -8 \\ s \end{bmatrix}.$$

Find r and s so that the given equations are true.

(a) $\mathbf{z} = 2\mathbf{x}$

r = 8

(b) $\frac{3}{2}\mathbf{u} = \mathbf{y}$

s = 8/3

(c) $\mathbf{z} + \mathbf{u} = \mathbf{x}$

r = 12

s = -2

6. 2.22/2.22 points | Previous Answers KolmanLinAlg9 4.1.015.

Let

$$\mathbf{x} = \begin{bmatrix} 7 \\ 4 \\ 3 \end{bmatrix}, \mathbf{y} = \begin{bmatrix} 4 \\ -2 \\ -4 \end{bmatrix}, \mathbf{z} = \begin{bmatrix} r \\ 2 \\ s \end{bmatrix}, \text{ and } \mathbf{u} = \begin{bmatrix} 3 \\ t \\ 4 \end{bmatrix}.$$

Find r, s, and t so that the given equations are true.

(a) $\mathbf{z} = \frac{1}{2}\mathbf{x}$,

$r = \boxed{7/2}$

$s = \boxed{3/2}$

(b) $\mathbf{z} + \mathbf{u} = \mathbf{x}$

$r = \boxed{4}$

$s = \boxed{-1}$

$t = \boxed{2}$

(c) $\mathbf{z} - \mathbf{x} = \mathbf{y}$

$r = \boxed{11}$

$s = \boxed{-1}$

7. 2.22/2.22 points | Previous Answers KolmanLinAlg9 4.1.016.

If possible, find scalars c_1 and c_2 so that the following is true. (If there is no solution, enter NO SOLUTION.)

$$c_1\begin{bmatrix} 1 \\ -2 \end{bmatrix} + c_2\begin{bmatrix} 3 \\ -4 \end{bmatrix} = \begin{bmatrix} -22 \\ 28 \end{bmatrix}$$

$(c_1, c_2) = \big(\qquad \big)$

8. 2.22/2.22 points | Previous Answers KolmanLinAlg9 4.1.017.

If possible, find scalars c_1, c_2, and c_3 so that the following is true. (If there is no solution, enter NO SOLUTION.)

$$c_1\begin{bmatrix} 1 \\ 3 \\ -7 \end{bmatrix} + c_2\begin{bmatrix} -1 \\ 1 \\ 1 \end{bmatrix} + c_3\begin{bmatrix} -1 \\ 5 \\ -5 \end{bmatrix} = \begin{bmatrix} 2 \\ -2 \\ 3 \end{bmatrix}$$

$(c_1, c_2, c_3) = \big(\qquad \big)$

9. 2.24/2.24 points | Previous Answers

If possible, find an example of actual numbers c_1, c_2, and c_3, not all zero, so that the following is true. (If there is no solution, enter NO SOLUTION.)

$$c_1\begin{bmatrix}3\\2\\-1\end{bmatrix}+c_2\begin{bmatrix}1\\1\\-2\end{bmatrix}+c_3\begin{bmatrix}3\\1\\4\end{bmatrix}=\begin{bmatrix}0\\0\\0\end{bmatrix}$$

$(c_1, c_2, c_3) = \Big(\qquad \Big)$