WebAssign
CH 5.1 (Homework)

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MA 265 Spring 2013, section 132, Spring 2013
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Current Score : 20 / 20 **Due :** Thursday, March 21 2013 11:40 PM EDT

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1. 2/2 points | Previous Answers KolmanLinAlg9 5.1.002.

Find the length of each vector.

(a) $\begin{bmatrix} 0 \\ -4 \\ 0 \end{bmatrix}$

(b) $\begin{bmatrix} -1 \\ -3 \\ -4 \end{bmatrix}$

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

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2. 2/2 points | Previous Answers KolmanLinAlg9 5.1.006.

Find the distance between **u** and **v**.

(a) $\mathbf{u} = \begin{bmatrix} -1 \\ -2 \\ -3 \end{bmatrix}, \quad \mathbf{v} = \begin{bmatrix} 5 \\ 6 \\ 7 \end{bmatrix}$

(b) $\mathbf{u} = \begin{bmatrix} 0 \\ 5 \\ -1 \end{bmatrix}, \quad \mathbf{v} = \begin{bmatrix} 1 \\ 6 \\ 0 \end{bmatrix}$

3. 2/2 points | Previous Answers KolmanLinAlg9 5.1.008.

Determine all values of c so that each given condition is satisfied. (Enter your answers as a comma-separated list.)

$$\|\mathbf{u}\| = 1 \text{ for } \mathbf{u} = \begin{bmatrix} \frac{6}{c} \\ \frac{9}{c} \\ -\frac{2}{c} \end{bmatrix}$$

$c =$

4. 2/2 points | Previous Answers KolmanLinAlg9 5.1.010.

For each pair of vectors, find the cosine of the angle θ between **u** and **v**.

(a) $\mathbf{u} = \begin{bmatrix} -1 \\ -2 \\ -3 \end{bmatrix}, \quad \mathbf{v} = \begin{bmatrix} 4 \\ 5 \\ 6 \end{bmatrix}$

(b) $\mathbf{u} = \begin{bmatrix} 0 \\ 2 \\ -1 \end{bmatrix}, \quad \mathbf{v} = \begin{bmatrix} 1 \\ 3 \\ 0 \end{bmatrix}$

5. 2/2 points | Previous Answers KolmanLinAlg9 5.1.017.

Which of the vectors

$$\mathbf{v}_1 = \begin{bmatrix} 3 \\ 5 \end{bmatrix}, \mathbf{v}_2 = \begin{bmatrix} 0 \\ 1 \end{bmatrix}, \mathbf{v}_3 = \begin{bmatrix} -6 \\ -10 \end{bmatrix}, \mathbf{v}_4 = \begin{bmatrix} -5 \\ 3 \end{bmatrix}, \mathbf{v}_5 = \begin{bmatrix} 6 \\ 10 \end{bmatrix}, \text{ and } \mathbf{v}_6 = \begin{bmatrix} -15 \\ 9 \end{bmatrix}$$

are: (Select all that apply.)

(a) orthogonal

- [ ] $\mathbf{v}_1$ and $\mathbf{v}_2$
- [ ] $\mathbf{v}_1$ and $\mathbf{v}_3$
- [x] $\mathbf{v}_1$ and $\mathbf{v}_4$
- [ ] $\mathbf{v}_1$ and $\mathbf{v}_5$
- [x] $\mathbf{v}_1$ and $\mathbf{v}_6$
- [ ] $\mathbf{v}_2$ and $\mathbf{v}_3$
- [ ] $\mathbf{v}_2$ and $\mathbf{v}_4$
- [ ] $\mathbf{v}_2$ and $\mathbf{v}_5$
- [ ] $\mathbf{v}_2$ and $\mathbf{v}_6$
- [x] $\mathbf{v}_3$ and $\mathbf{v}_4$
- [ ] $\mathbf{v}_3$ and $\mathbf{v}_5$
- [x] $\mathbf{v}_3$ and $\mathbf{v}_6$
- [x] $\mathbf{v}_4$ and $\mathbf{v}_5$
- [ ] $\mathbf{v}_4$ and $\mathbf{v}_6$
- [x] $\mathbf{v}_5$ and $\mathbf{v}_6$

(b) in the same direction

- [ ] $\mathbf{v}_1$ and $\mathbf{v}_2$
- [ ] $\mathbf{v}_1$ and $\mathbf{v}_3$
- [ ] $\mathbf{v}_1$ and $\mathbf{v}_4$
- [x] $\mathbf{v}_1$ and $\mathbf{v}_5$
- [ ] $\mathbf{v}_1$ and $\mathbf{v}_6$
- [ ] $\mathbf{v}_2$ and $\mathbf{v}_3$
- [ ] $\mathbf{v}_2$ and $\mathbf{v}_4$
- [ ] $\mathbf{v}_2$ and $\mathbf{v}_5$
- [ ] $\mathbf{v}_2$ and $\mathbf{v}_6$
- [ ] $\mathbf{v}_3$ and $\mathbf{v}_4$
- [ ] $\mathbf{v}_3$ and $\mathbf{v}_5$
- [ ] $\mathbf{v}_3$ and $\mathbf{v}_6$
- [ ] $\mathbf{v}_4$ and $\mathbf{v}_5$
- [x] $\mathbf{v}_4$ and $\mathbf{v}_6$
- [ ] $\mathbf{v}_5$ and $\mathbf{v}_6$

(c) in opposite directions

- [ ] $\mathbf{v}_1$ and $\mathbf{v}_2$
- [x] $\mathbf{v}_1$ and $\mathbf{v}_3$
- [ ] $\mathbf{v}_1$ and $\mathbf{v}_4$
- [ ] $\mathbf{v}_1$ and $\mathbf{v}_5$
- [ ] $\mathbf{v}_1$ and $\mathbf{v}_6$
- [ ] $\mathbf{v}_2$ and $\mathbf{v}_3$
- [ ] $\mathbf{v}_2$ and $\mathbf{v}_4$
- [ ] $\mathbf{v}_2$ and $\mathbf{v}_5$
- [ ] $\mathbf{v}_2$ and $\mathbf{v}_6$
- [ ] $\mathbf{v}_3$ and $\mathbf{v}_4$
- [x] $\mathbf{v}_3$ and $\mathbf{v}_5$
- [ ] $\mathbf{v}_3$ and $\mathbf{v}_6$
- [ ] $\mathbf{v}_4$ and $\mathbf{v}_5$
- [ ] $\mathbf{v}_4$ and $\mathbf{v}_6$
- [ ] $\mathbf{v}_5$ and $\mathbf{v}_6$

6. 2/2 points | Previous Answers KolmanLinAlg9 5.1.018.

Which of the vectors

$$\mathbf{v}_1 = \begin{bmatrix} 1 \\ -1 \\ -4 \end{bmatrix}, \mathbf{v}_2 = \begin{bmatrix} 15 \\ -1 \\ 4 \end{bmatrix}, \mathbf{v}_3 = \begin{bmatrix} 4 \\ 32 \\ -7 \end{bmatrix}, \mathbf{v}_4 = \begin{bmatrix} \frac{1}{2} \\ 0 \\ \frac{1}{8} \end{bmatrix}, \mathbf{v}_5 = \begin{bmatrix} \frac{1}{2} \\ -\frac{1}{2} \\ -2 \end{bmatrix}, \text{ and } \mathbf{v}_6 = \begin{bmatrix} -\frac{4}{5} \\ -\frac{32}{5} \\ \frac{7}{5} \end{bmatrix}$$

are: (Select all that apply.)

(a) orthogonal

☑ $\mathbf{v}_1$ and $\mathbf{v}_2$	☑ $\mathbf{v}_2$ and $\mathbf{v}_3$	☑ $\mathbf{v}_3$ and $\mathbf{v}_5$
☑ $\mathbf{v}_1$ and $\mathbf{v}_3$	☐ $\mathbf{v}_2$ and $\mathbf{v}_4$	☐ $\mathbf{v}_3$ and $\mathbf{v}_6$
☑ $\mathbf{v}_1$ and $\mathbf{v}_4$	☑ $\mathbf{v}_2$ and $\mathbf{v}_5$	☑ $\mathbf{v}_4$ and $\mathbf{v}_5$
☐ $\mathbf{v}_1$ and $\mathbf{v}_5$	☑ $\mathbf{v}_2$ and $\mathbf{v}_6$	☐ $\mathbf{v}_4$ and $\mathbf{v}_6$
☑ $\mathbf{v}_1$ and $\mathbf{v}_6$	☐ $\mathbf{v}_3$ and $\mathbf{v}_4$	☑ $\mathbf{v}_5$ and $\mathbf{v}_6$

(b) in the same direction

☐ $\mathbf{v}_1$ and $\mathbf{v}_2$	☐ $\mathbf{v}_2$ and $\mathbf{v}_3$	☐ $\mathbf{v}_3$ and $\mathbf{v}_5$
☐ $\mathbf{v}_1$ and $\mathbf{v}_3$	☐ $\mathbf{v}_2$ and $\mathbf{v}_4$	☐ $\mathbf{v}_3$ and $\mathbf{v}_6$
☐ $\mathbf{v}_1$ and $\mathbf{v}_4$	☐ $\mathbf{v}_2$ and $\mathbf{v}_5$	☐ $\mathbf{v}_4$ and $\mathbf{v}_5$
☑ $\mathbf{v}_1$ and $\mathbf{v}_5$	☐ $\mathbf{v}_2$ and $\mathbf{v}_6$	☐ $\mathbf{v}_4$ and $\mathbf{v}_6$
☐ $\mathbf{v}_1$ and $\mathbf{v}_6$	☐ $\mathbf{v}_3$ and $\mathbf{v}_4$	☐ $\mathbf{v}_5$ and $\mathbf{v}_6$

(c) in opposite directions

☐ $\mathbf{v}_1$ and $\mathbf{v}_2$	☐ $\mathbf{v}_2$ and $\mathbf{v}_3$	☐ $\mathbf{v}_3$ and $\mathbf{v}_5$
☐ $\mathbf{v}_1$ and $\mathbf{v}_3$	☐ $\mathbf{v}_2$ and $\mathbf{v}_4$	☑ $\mathbf{v}_3$ and $\mathbf{v}_6$
☐ $\mathbf{v}_1$ and $\mathbf{v}_4$	☐ $\mathbf{v}_2$ and $\mathbf{v}_5$	☐ $\mathbf{v}_4$ and $\mathbf{v}_5$
☐ $\mathbf{v}_1$ and $\mathbf{v}_5$	☐ $\mathbf{v}_2$ and $\mathbf{v}_6$	☐ $\mathbf{v}_4$ and $\mathbf{v}_6$
☐ $\mathbf{v}_1$ and $\mathbf{v}_6$	☐ $\mathbf{v}_3$ and $\mathbf{v}_4$	☐ $\mathbf{v}_5$ and $\mathbf{v}_6$

7. 2/2 points | Previous Answers KolmanLinAlg9 5.1.025.

Find c so that the vector $\mathbf{v} = \begin{bmatrix} 4 \\ c \\ 3 \end{bmatrix}$ is orthogonal to $\mathbf{w} = \begin{bmatrix} 1 \\ -2 \\ 1 \end{bmatrix}$.

c = 3.5

8. 2/2 points | Previous Answers KolmanLinAlg9 5.1.026.

If possible, find a, b, and c so that $\mathbf{v} = \begin{bmatrix} a \\ b \\ c \end{bmatrix}$ is orthogonal to both $\mathbf{w} = \begin{bmatrix} 1 \\ 4 \\ 1 \end{bmatrix}$ and $\mathbf{x} = \begin{bmatrix} 1 \\ -6 \\ 1 \end{bmatrix}$. (If there is no solution, enter NO SOLUTION.)

$(a, b, c) = \Big(\qquad \Big)$

9. 2/2 points | Previous Answers KolmanLinAlg9 5.1.027.

If possible, find a and b so that $\mathbf{v} = \begin{bmatrix} a \\ b \\ 3 \end{bmatrix}$ is orthogonal to both $\mathbf{w} = \begin{bmatrix} 6 \\ 1 \\ 1 \end{bmatrix}$ and $\mathbf{x} = \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}$. (If there is no solution, enter NO SOLUTION.)

$(a, b) = \Big(\qquad \Big)$

10. 2/2 points | Previous Answers KolmanLinAlg9 5.1.028.

Find c so that the vectors $\begin{bmatrix} c \\ 5 \end{bmatrix}$ and $\begin{bmatrix} 2 \\ 6 \end{bmatrix}$ are parallel.

c = 5/3