

Instructions

- Answer each question completely; justify your answers.
- This assignment is due at 17:00 on Wednesday September 26th in Assignment Box #42.

1. Find $\|v\|$:

$$(a) v = \begin{bmatrix} \frac{2}{3} \\ \frac{4}{5} \end{bmatrix}$$

$$(b) v = \begin{bmatrix} 6 \\ 13 \\ -4 \\ 0 \end{bmatrix}$$

2. Find the unit vector in the direction of:

$$(a) u = \begin{bmatrix} \frac{3}{4} \\ \frac{7}{8} \end{bmatrix}$$

$$(b) v = \begin{bmatrix} 2 \\ -11 \\ -1 \\ 4 \end{bmatrix}$$

3. Find the angle between the vectors u and v :

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

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

$$(c) u = \begin{bmatrix} -1 \\ 2 \\ 3 \\ -4 \end{bmatrix}, v = \begin{bmatrix} 3 \\ 4 \\ 1 \\ 2 \end{bmatrix}$$

4. Let $u = \begin{bmatrix} 1 \\ 0 \\ -1 \\ 2 \end{bmatrix}$ and $v = \begin{bmatrix} -2 \\ 1 \\ 4 \\ 3 \end{bmatrix}$. Find all scalars c such that u is orthogonal to cv .