

1 | Vectors

1.1 | 40)

The angle between the two vectors is greater than $\frac{\pi}{2}$.

1.2 | 43)

Answered in class.

2 | Matrices

2.1 | 1d)

$$\begin{aligned}(BA)^T &= \left(\begin{bmatrix} 7 & 8 \\ 9 & 10 \\ 11 & 12 \end{bmatrix} \cdot \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} \right)^T \\ &= \left(\begin{bmatrix} 39 & 54 & 69 \\ 49 & 68 & 87 \\ 59 & 82 & 105 \end{bmatrix} \right)^T \\ &= \begin{bmatrix} 39 & 49 & 59 \\ 54 & 68 & 82 \\ 69 & 87 & 105 \end{bmatrix}\end{aligned}$$

2.2 | 1e)

$$\begin{aligned}(AB)^T &= \left(\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} \cdot \begin{bmatrix} 7 & 8 \\ 9 & 10 \\ 11 & 12 \end{bmatrix} \right)^T \\ &= \left(\begin{bmatrix} 58 & 64 \\ 139 & 154 \end{bmatrix} \right)^T \\ &= \begin{bmatrix} 58 & 139 \\ 64 & 154 \end{bmatrix}\end{aligned}$$

3 | Vector in 3D

$$A = \langle \frac{2}{3}, 1, \frac{1}{2} \rangle \quad B = \langle 4, -6, 3 \rangle \quad \text{Normal} = \langle 6, 0, -8 \rangle$$

Image:

