

ASSIGNMENT 1  
AI20MTECH11003  
Shweta Verma

Question

Find the cross product of a and b.

$$\vec{a} = \begin{pmatrix} 1 \\ -7 \\ 7 \end{pmatrix}$$

$$\vec{b} = \begin{pmatrix} 3 \\ -2 \\ 2 \end{pmatrix}$$

Solution =

Cross Product of two vectors

cross product of two vectors is determined by spanning a vector into skew symmetric matrix-

$a \times b$

$$= \begin{bmatrix} 0 & -a_3 & a_2 \\ a_3 & 0 & -a_1 \\ -a_2 & a_1 & 0 \end{bmatrix} \begin{bmatrix} 3 \\ -2 \\ 2 \end{bmatrix}$$

$$= \begin{bmatrix} 0 & -7 & -7 \\ 7 & 0 & -1 \\ 7 & 1 & 0 \end{bmatrix} \begin{bmatrix} 3 \\ -2 \\ 2 \end{bmatrix}$$

$$= \begin{bmatrix} 0 \\ 19 \\ 19 \end{bmatrix}$$