

Assignment No.2

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Question taken from

https://github.com/gadepall/ncert/blob/main/linalg/vectors/gvv_ncert_vectors.pdf– Q.no.2.24

1 QUESTION No.2.24

Find a unit vector in the direction of $\begin{pmatrix} 1 \\ 1 \\ -2 \end{pmatrix}$

2 SOLUTION

Magnitude of vector a

$$\|\mathbf{a}\| = \sqrt{(1)^2 + (1)^2 + (-2)^2} \quad (2.0.1)$$

$$= \sqrt{1 + 1 + 4} = \sqrt{6} \quad (2.0.2)$$

The unit vector is calculated as

$$\frac{\mathbf{a}}{\|\mathbf{a}\|} = \frac{\begin{pmatrix} 1 \\ 1 \\ -2 \end{pmatrix}}{\left\| \begin{pmatrix} 1 \\ 1 \\ -2 \end{pmatrix} \right\|} \quad (2.0.3)$$

$$= \frac{1}{\sqrt{6}} \begin{pmatrix} 1 \\ 1 \\ -2 \end{pmatrix} \quad (2.0.4)$$

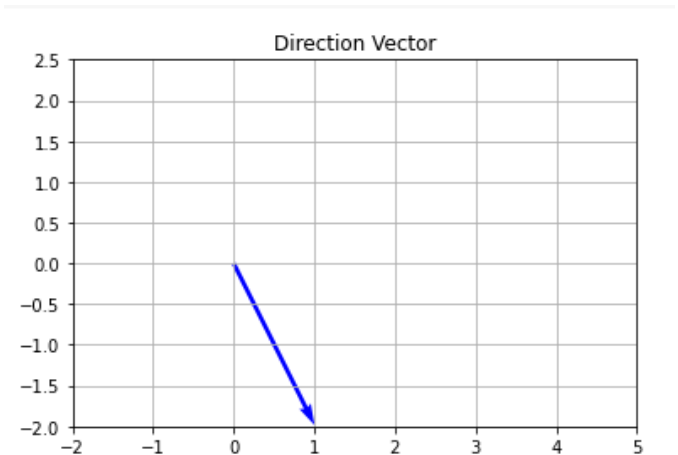


Fig. 0: Fig. 2.25