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Assignment 1

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Download all latex codes from

https://github.com/V-Gopireddy/EE3900/blob/main/Assignment1/latex.tex

1 Vectors Q2.21

Find the unit vector in the direction of

$$\begin{bmatrix} 2 \\ -1 \\ -2 \end{bmatrix} \tag{1.0.1}$$

2 Solution

Let U be the unit vector in the direction of given vector,

$$V = \begin{bmatrix} 2 \\ -1 \\ -2 \end{bmatrix} \tag{2.0.1}$$

We get,

$$||V|| = \sqrt{(2)^2 + (-1)^2 + (-2)^2}$$
 (2.0.2)

$$\therefore ||V|| = 3 \tag{2.0.3}$$

By definition,

$$U = \frac{V}{\|V\|}$$
 (2.0.4)

$$\therefore U = \frac{1}{3} \begin{bmatrix} 2 \\ -1 \\ -2 \end{bmatrix}$$
 (2.0.5)