

$$\mathbf{A} = \begin{pmatrix} -2.46 \\ 1.36 \end{pmatrix}, \quad |\mathbf{A}| = 2.81 \text{ N}$$

$$\mathbf{B} = \begin{pmatrix} 4 \\ 2 \end{pmatrix}, \quad |\mathbf{B}| = 4.47 \text{ N}$$

Unit Vector:

$$\hat{\mathbf{A}} = \frac{\mathbf{A}}{|\mathbf{A}|} = \begin{pmatrix} -0.87 \\ 0.48 \end{pmatrix}$$

Scalar product:

$$\begin{aligned} \mathbf{A} \cdot \mathbf{B} &= |\mathbf{A}| |\mathbf{B}| \cos \theta \\ &= A_x B_x + A_y B_y \\ &= -7.11 \text{ N} \end{aligned}$$

Projection of vector \mathbf{B} on \mathbf{A} .

$$\mathbf{u} = (\hat{\mathbf{A}} \cdot \mathbf{B}) \hat{\mathbf{A}} = \begin{pmatrix} 2.21 \\ -1.23 \end{pmatrix}$$

