

Homework #1

Problem 5 - 3.2.4:

Part a)

A vector perpendicular to \mathbf{U} and \mathbf{V} is their vector product thus let's calculate the perpendicular vector \mathbf{A} :

$$\mathbf{A} = \mathbf{U} \times \mathbf{V} = -3(\hat{\mathbf{y}} + \hat{\mathbf{z}}).$$

Part b)

Now we need to divide \mathbf{A} by its magnitude given by $(\mathbf{A} \cdot \mathbf{A})^{1/2} = 3\sqrt{2}$. Then

$$\mathbf{A} = -\frac{1}{\sqrt{2}}(\hat{\mathbf{y}} + \hat{\mathbf{z}}).$$