

Problem 1.13

Expressing one vector in terms of another

Let \mathbf{A} be an arbitrary vector and let $\hat{\mathbf{n}}$ be a unit vector in some fixed direction. Show that

$$\mathbf{A} = (\mathbf{A} \cdot \hat{\mathbf{n}})\hat{\mathbf{n}} + (\hat{\mathbf{n}} \times \mathbf{A}) \times \hat{\mathbf{n}}.$$