

Special Problem 2-4.2

Rewrite the discrete vector \mathbf{A} in terms of a set of orthonormal base vectors $\hat{b}_1, \hat{b}_2, \hat{b}_3$; where:

$$\mathbf{A} = 3\hat{a}_x + 2\hat{a}_y$$

and

$$\begin{array}{lll} \hat{a}_x \cdot \hat{b}_1 = \frac{1}{\sqrt{2}} & \hat{a}_x \cdot \hat{b}_2 = 0 & \hat{a}_x \cdot \hat{b}_3 = \frac{1}{\sqrt{2}} \\ \hat{b}_1 \cdot \hat{a}_y = \frac{1}{\sqrt{2}} & \hat{b}_2 \cdot \hat{a}_y = 0 & \hat{b}_3 \cdot \hat{a}_y = \frac{-1}{\sqrt{2}} \end{array}$$