

Exercise 1

Calculate $(3\mathbf{i} + 2\mathbf{j} + \mathbf{k}) \cdot (\mathbf{i} + 2\mathbf{j} - \mathbf{k})$.

Solution

$$\begin{aligned}(3\mathbf{i} + 2\mathbf{j} + \mathbf{k}) \cdot (\mathbf{i} + 2\mathbf{j} - \mathbf{k}) &= (3)(1) + (2)(2) + (1)(-1) \\ &= 3 + 4 - 1 \\ &= 6\end{aligned}$$