

**Question**

Find the work done by the force  $\mathbf{F} = (4, 3, 2)$  in moving from  $P(-1, -2, 4)$  to  $Q(2, 1, 0)$

**Answer**

$$W = \mathbf{F} \cdot \vec{PQ} \quad \mathbf{F} = (4, 3, 2)$$

$$\vec{PQ} = \vec{OQ} - \vec{OP} = (2, 1, 0) - (-1, -2, 4) = (3, 3, -4)$$

$$\mathbf{F} \cdot \vec{PQ} = (4, 3, 2) \cdot (3, 3, -4) = 12 + 6 - 8 = 13 = \text{Work Done}$$