Homework #1

Problem 4 - 3.2.1:

We know that

$$\mathbf{P} = P_x\hat{\mathbf{x}} + P_y\hat{\mathbf{y}},$$

and

$$\mathbf{Q} = Q_x\hat{\mathbf{x}} + Q_y\hat{\mathbf{y}},$$

Let's calculate their vector product

$$\mathbf{P} \times \mathbf{Q} = (P_xQ_y - Q_xP_y)\hat{\mathbf{z}},$$

which shows that the vector is in the z-direction.