DISPLACEMENT VECTORS – ANSWERS

(1-5) Given points *P* and *Q*, find the displacement vector $\overrightarrow{PQ}$.

1. $P=(1,0,3)$ and $Q=(0,2,4)$
   $\overrightarrow{PQ}=-\hat{i}+2\hat{j}+\hat{k}$

2. $P=(2,3,4)$ and $Q=(5,3,8)$
   $\overrightarrow{PQ}=3\hat{i}+4\hat{k}$

3. $P=(-4,3,-8)$ and $Q=(1,2,3)$
   $\overrightarrow{PQ}=5\hat{i}-\hat{j}+11\hat{k}$

4. $P=(-2,-3,4)$ and $Q=(5,3,8)$
   $\overrightarrow{PQ}=7\hat{i}+6\hat{j}+4\hat{k}$

5. $P=(2,3,0)$ and $Q=(2,3,5)$
   $\overrightarrow{PQ}=5\hat{k}$

6. For the points $P=(1,-1,1)$, $Q=(2,-2,2)$, $R=(2,0,1)$, and $S=(3,-1,2)$, does $\overrightarrow{PQ}=\overrightarrow{RS}$?
   $\overrightarrow{PQ}=\hat{i}-\hat{j}+\hat{k}$
   $\overrightarrow{RS}=\hat{i}-\hat{j}+\hat{k}$
   Yes

7. For the points $P=(0,0,0)$, $Q=(1,3,2)$, $R=(1,0,1)$, and $S=(2,3,4)$, does $\overrightarrow{PQ}=\overrightarrow{RS}$?
   $\overrightarrow{PQ}=\hat{i}+3\hat{j}+2\hat{k}$
   $\overrightarrow{RS}=\hat{i}+3\hat{j}+3\hat{k}$
   No