

### Question 31753

I) Since displacement  $\vec{S}$  is the vector which connects start and end points (which are the same),  $|\vec{S}|=0$ , hence displacement is zero.

II) There is not enough information in order to find the distance between A and B. At least one more value (like, for example time in forward or reverse direction) is needed.

III) Average velocity is  $|\vec{v}| = \frac{|\vec{S}|}{t}$ . Since displacement is zero (see point I), average velocity is zero.

IV) Average speed is  $v = \frac{2l}{t}$ , where  $l$  is the distance between A and B, and  $t$  is the time spent to go

forward and back.  $v = \frac{2l}{\frac{l}{30} + \frac{l}{50}} = \frac{2l}{\frac{80l}{1500}} = 37.5 \text{ km/h}$ .