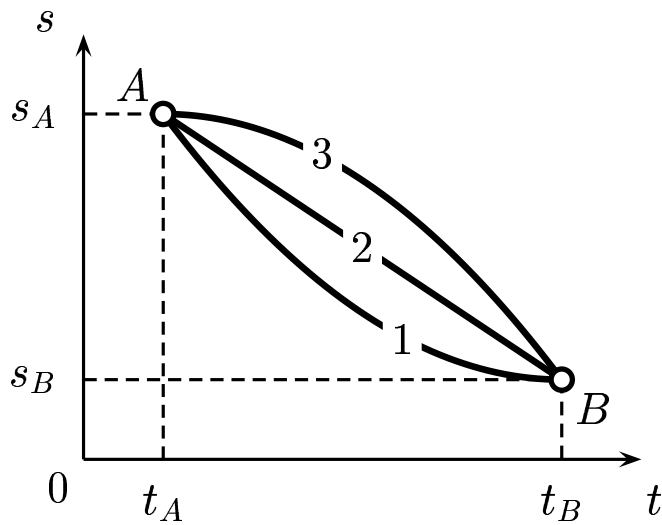


Consider three position curves between time points  $A$  and  $B$ .



$$\bar{v} = \frac{v_A + v_B}{2},$$

when  $a$  is constant.

Choose the correct relationship among quantities  $\bar{v}_1$ ,  $\bar{v}_2$ , and  $\bar{v}_3$ .

- A)  $\bar{v}_1 < \bar{v}_2 < \bar{v}_3$
- B)  $\bar{v}_1 = \bar{v}_2 = \bar{v}_3$
- C)  $\bar{v}_1 > \bar{v}_2 > \bar{v}_3$

The average velocity of an object is defined as follows

$$\begin{aligned}\bar{v} &= \frac{\text{displacement}}{\text{time}} \\ &= \frac{s_B - s_A}{t_B - t_A}.\end{aligned}$$

All three curves have exactly the same change in position  $\Delta s = s_B - s_A$  in exactly the same time interval  $\Delta t = t_B - t_A$ . Hence all three average velocities are equal

$$\bar{v}_1 = \bar{v}_2 = \bar{v}_3.$$

Answer **B**.

02.02-01 Average velocity 2004-3-24