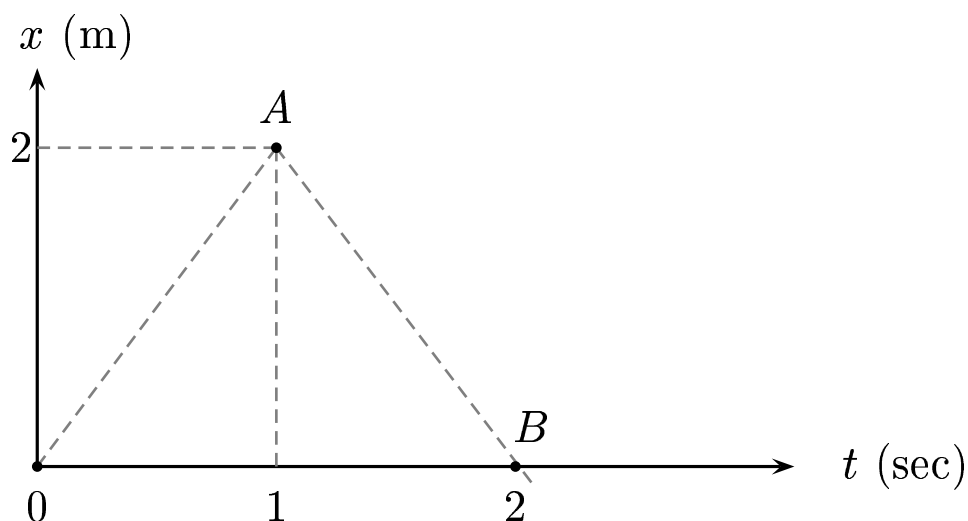


Consider the displacement curve  $OAB$  and the motion from  $O$  to  $A$  to  $B$ .



Determine the average velocity and the average speed (in units of m/s) from  $t = 0$  s to  $t = 2$  s.

- A) The average velocity is 2 m/s and the average speed is 0 m/s.
- B) The average velocity is 0 m/s and the average speed is 2 m/s.
- C) The average velocity is 2 m/s and the average speed is 2 m/s.
- D) The average velocity is  $-2$  m/s and the average speed is 2 m/s.

The average velocity is given by

$$\vec{v} = \frac{\text{displacement}}{\text{time}} = \frac{x_B - x_O}{t_B - t_O} = 0 \text{ m/s}.$$

The average speed  $s$  is given by

$$s = \frac{\text{distance}}{\text{time}} = \frac{|x_A - x_O| + |x_B - x_A|}{t_B - t_O} = 2 \text{ m/s}.$$

Answer **B**.

02.02-03 Velocity vs Speed 2004-3-24