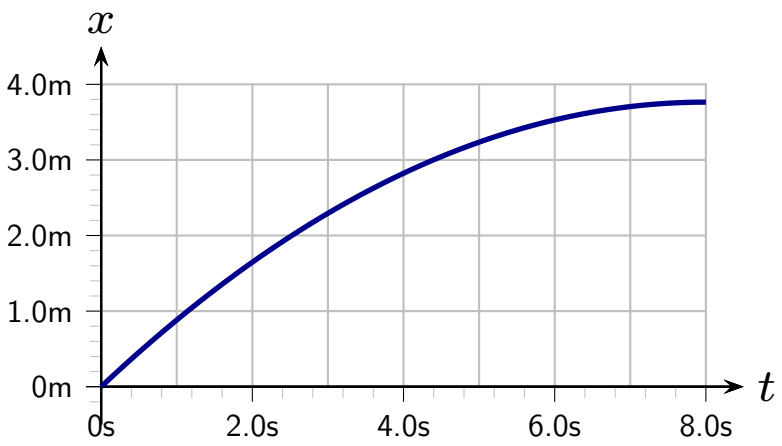
Instantaneous Velocity for the Moving Man

t_i	t_f	x_i	x_f	Δt	Δx	v_{avg}
4.00 s	5.00 s	2.00 m	5.00 m	1.00 s	3.00 m	**3.00** m/s
4.00 s	4.50 s	2.00 m	3.25 m	0.50 s	2.50 m	**2.50** m/s
4.00 s	4.10 s	2.00 m	2.21 m	0.10 s	0.210 m	**2.10** m/s
4.00 s	4.05 s	2.00 m	2.103 m	0.05 s	0.103 m	**2.05** m/s
4.00 s	4.01 s	2.00 m	2.020 m	0.01 s	0.020 m	**2.00** m/s

Question 1

A graph of position vs. time for an object moving in one dimension is illustrated.

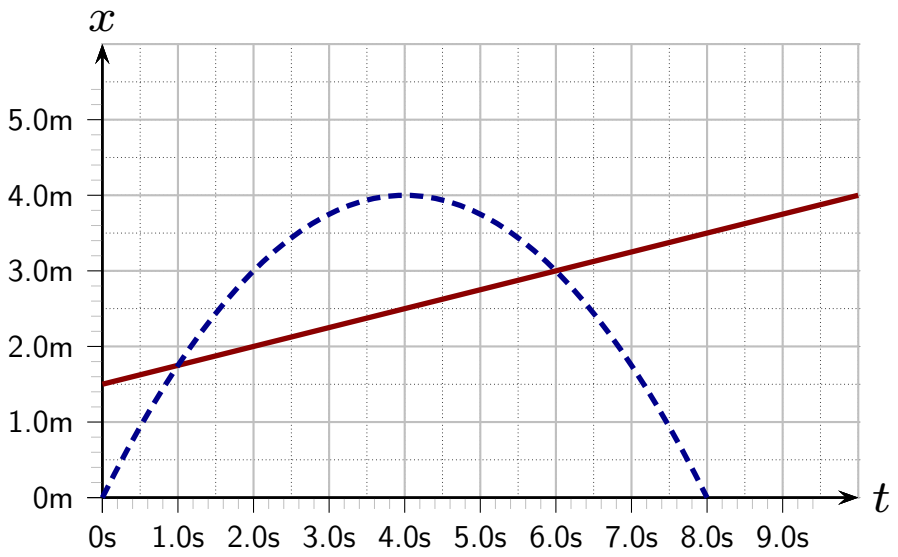


Which of following is true about the object's acceleration during the illustrated period?

1. Moves right with decreasing speed.
2. Moves right with increasing speed.
3. Moves right with constant speed.
4. Moves left with decreasing speed.
5. Moves left with increasing speed.
6. Moves left with constant speed.

Question 2

Two trains move along straight parallel tracks. Graphs of position vs. time for them are illustrated with that for train 1 corresponding to the solid red line and that for train 2 to the dashed blue line.



Which of the following is true regarding the velocities of the trains?

1. They are never the same.
2. They are the same only at $1.0\,\mathrm{s}$.
3. They are the same only at $6.0\,\mathrm{s}$.
4. There is one instant when they are the same: between $1.0\,\mathrm{s}$ and $6.0\,\mathrm{s}$.
5. They are are the same at $1.0\,\mathrm{s}$ and $6.0\,\mathrm{s}$.