Question 1

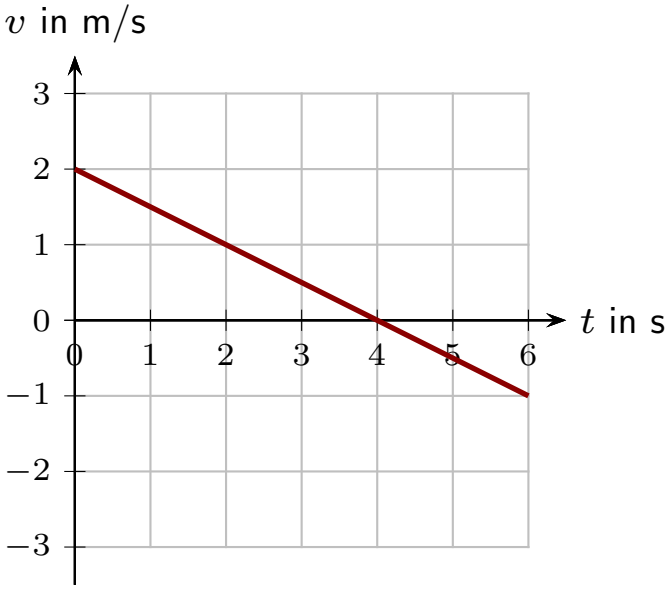
A cart slides to the left with constantly increasing *speed.*

Which of the following is true?

1. The average acceleration is positive.
2. The average acceleration is negative.
3. The average acceleration is negative if the cart is right of the origin but positive if it is left of the origin.
4. The average acceleration is negative if the cart is left of the origin but positive if it is right of the origin.
5. The average acceleration is zero.

Question 2

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

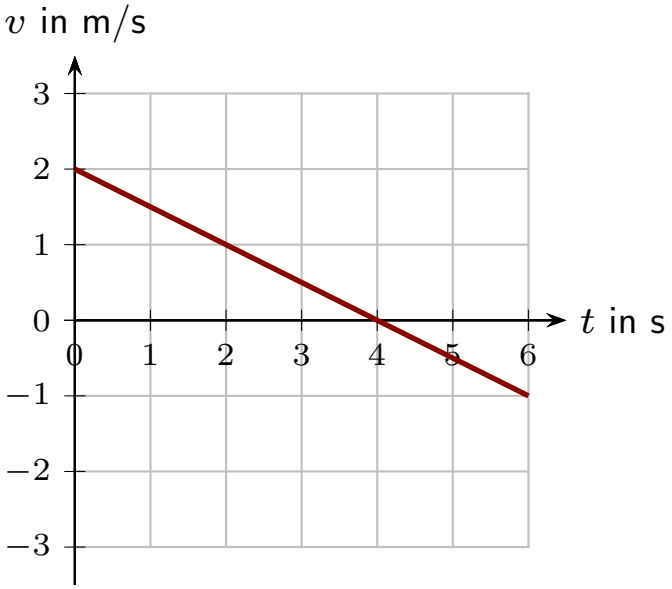


Which of the following is true about the object's motion during the period from $0\,\mathrm{s}$ to $6\,\mathrm{s}$?

1. It is always speeding up.
2. It is always slowing down.
3. At some times it is speeding up; at others it is slowing down.

Question 3

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



Which of the following is true during the period from $0\,\mathrm{s}$ to $6\,\mathrm{s}$?

1. Acceleration is zero.
2. Acceleration is always positive.
3. Acceleration is always negative.
4. At some times acceleration is positive; at others it is negative.

Warm Up Question 1

A car, at rest at an initial instant, has a constant positive acceleration for the next 100 seconds. Consider the displacement of the car during the first $5\,\mathrm{s}$ interval after it starts to move and the second $5\,\mathrm{s}$ interval after it starts to move. Is the displacement during the second interval the same as, smaller than or larger than the first interval? Explain your answer.

1. The same since acceleration is constant.
2. Larger in the second interval since it will have a higher speed.
3. Larger in the second interval. Look at a v versus t graph.

Warm Up Question 2

A snail moves in a straight line with constant positive acceleration. At an initial instant the snail's velocity is v_0. Consider an interval after this with duration t. Does the equation

$$\Delta x = v_0 t$$

correctly predict the displacement of the snail during this interval? Explain your answer.

1. No. It does not account for changing velocity.
2. No. Velocity at the end is larger than at the beginning.
3. No. $\Delta x = v_0 t + \frac{1}{2} a t^2$.
4. Yes. Position is velocity multiplied by time.