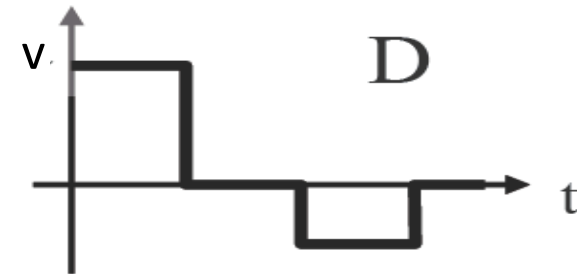
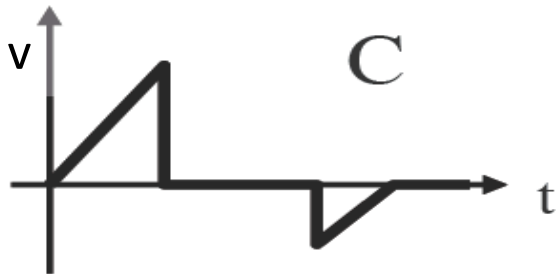
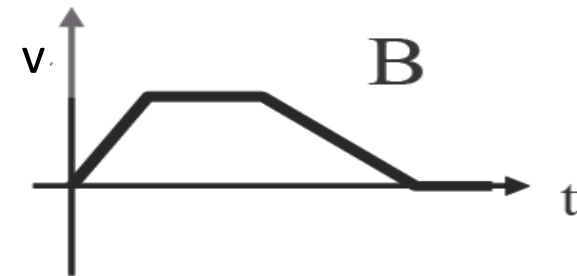
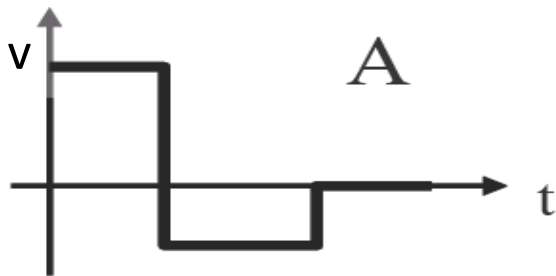
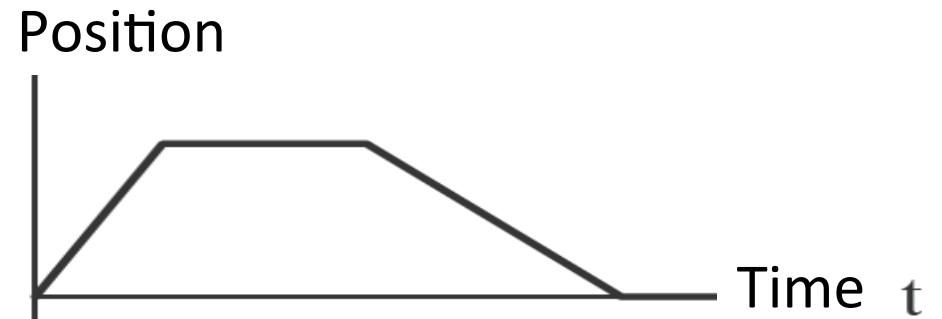


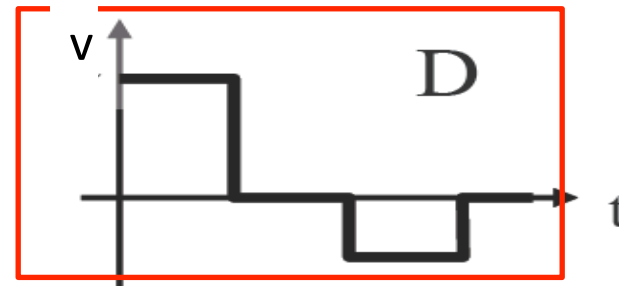
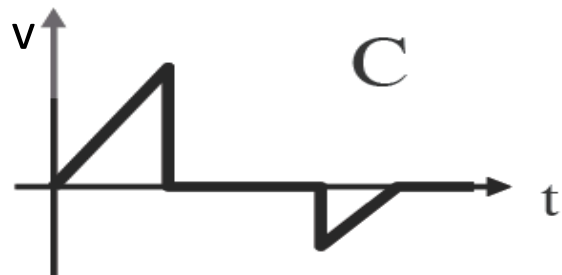
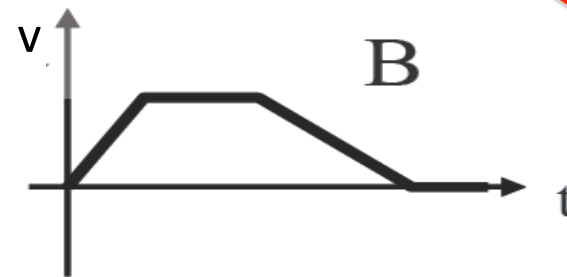
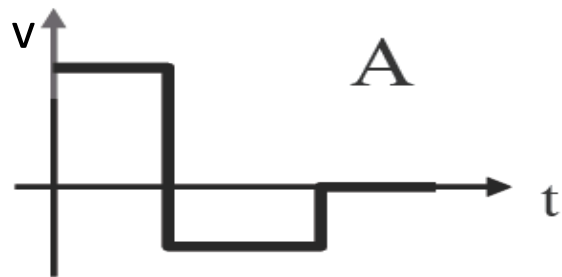
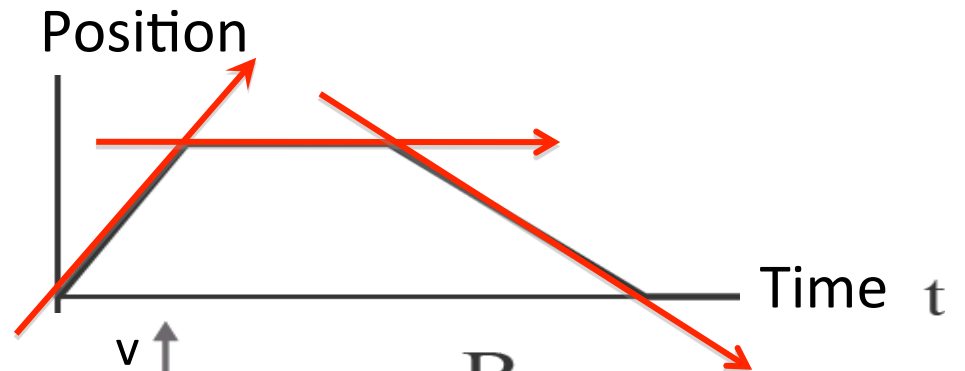
A train moves along a straight track.

Which graph below represents the correct velocity versus time graph?



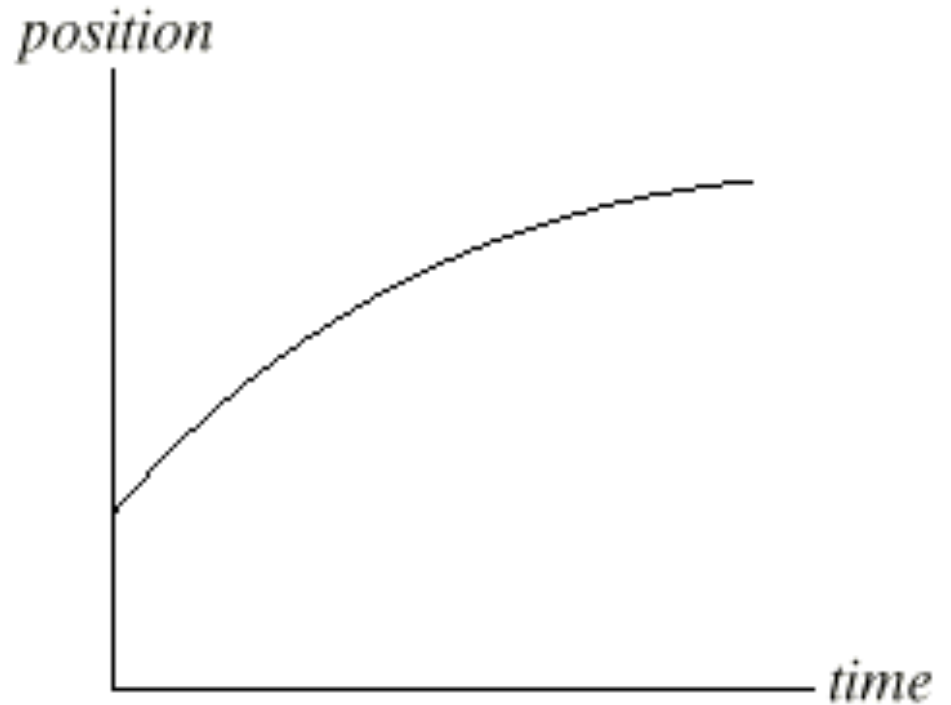
Only three constant slopes (velocities):
positive, zero, negative

Which graph below represents the correct velocity versus time graph?



A train moves along a straight track.

This graph shows that the train...

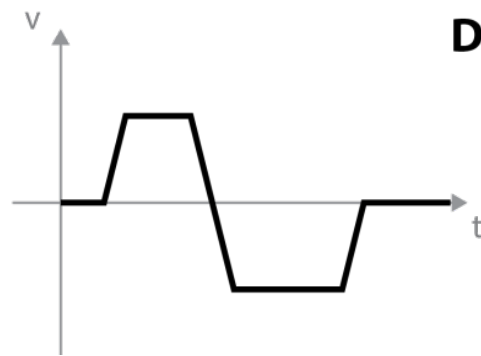
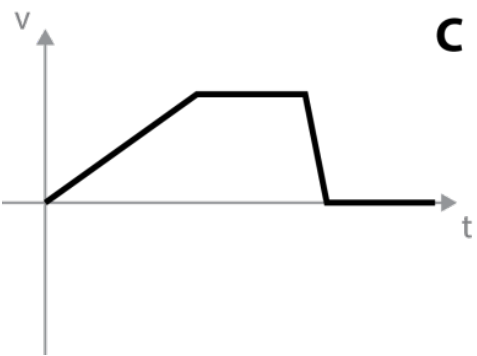
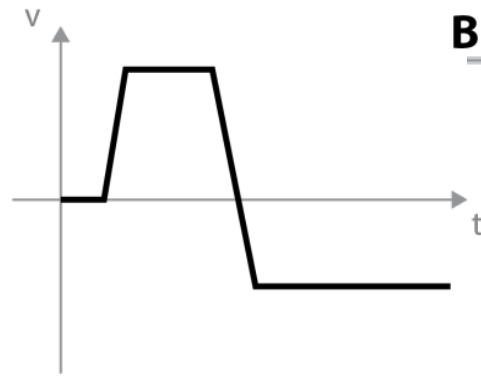
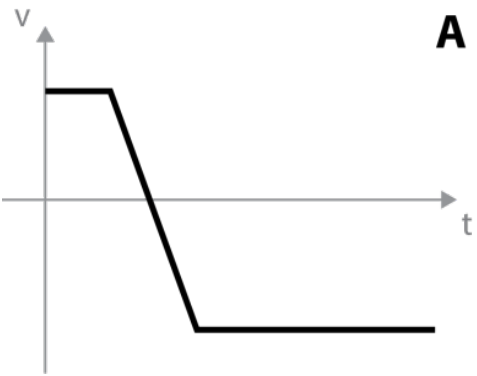
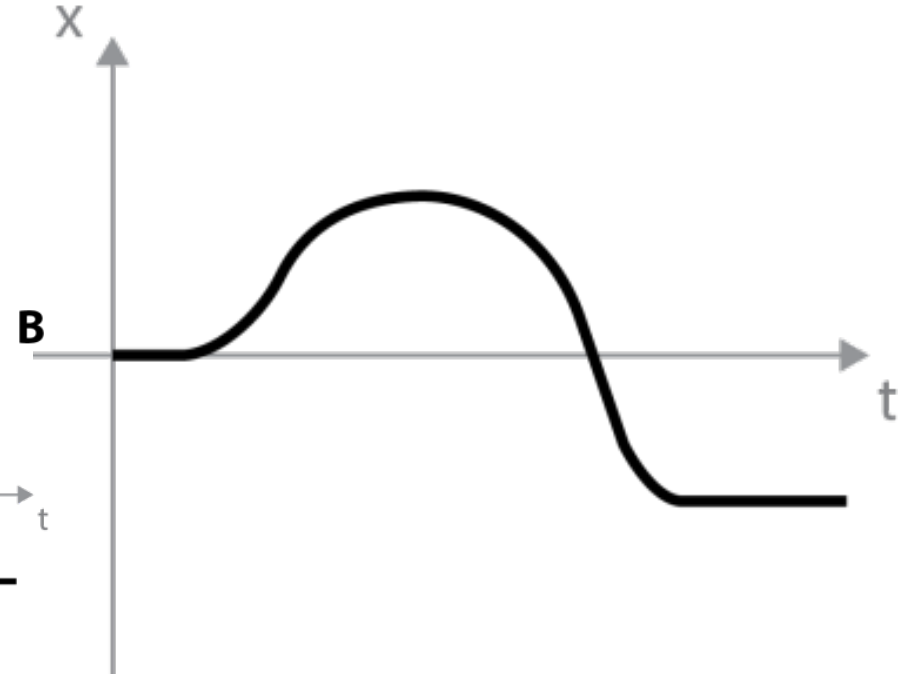


- A) Speeds up all the time
- B) Slow down all the time
- C) Speeds up part of the time, and slows down others
- D) Moves at a constant velocity
- E) Other/not really so sure/...?

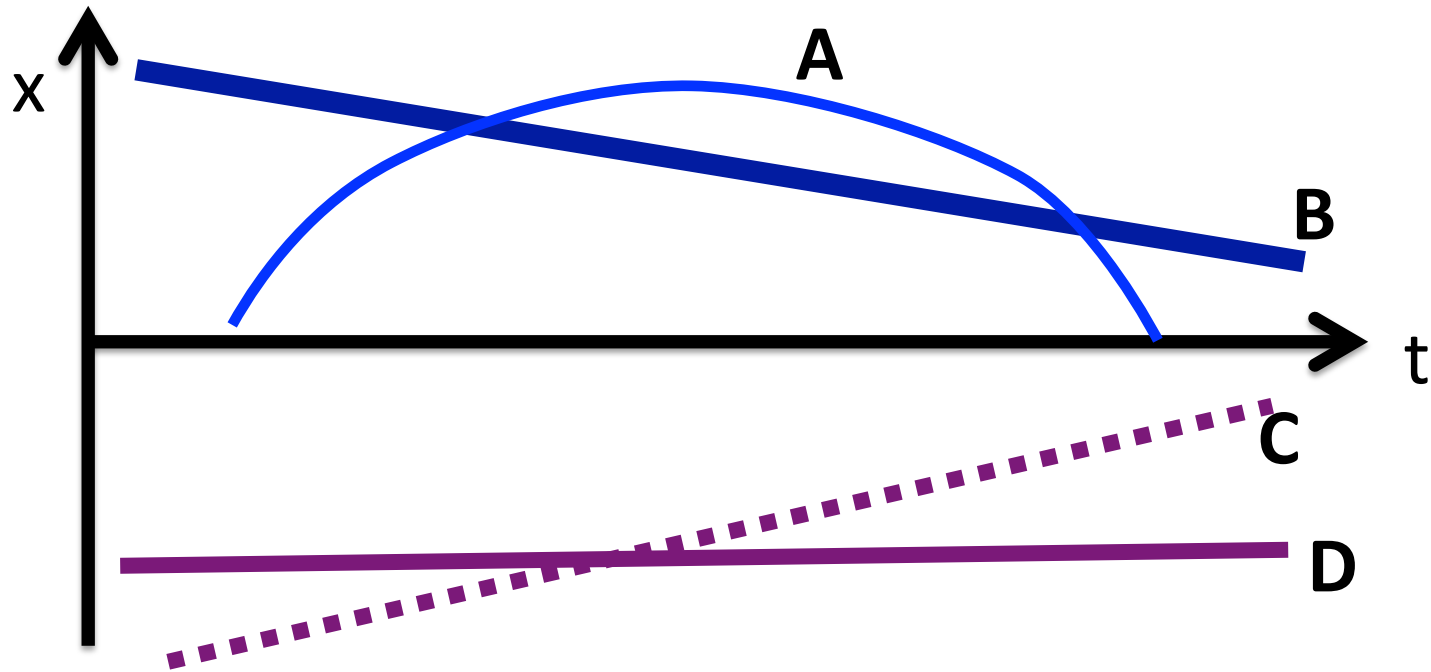
Announcements

- **Written HW #1** due this Friday@ 4 PM in box (Help room)
- **CAPA #2** next Tues
- Reading: Ch 2.5-2.8 for Friday
- Print **Recitation Assignment** for your Section this week

Which velocity vs. time graph best matches this position vs time graph?

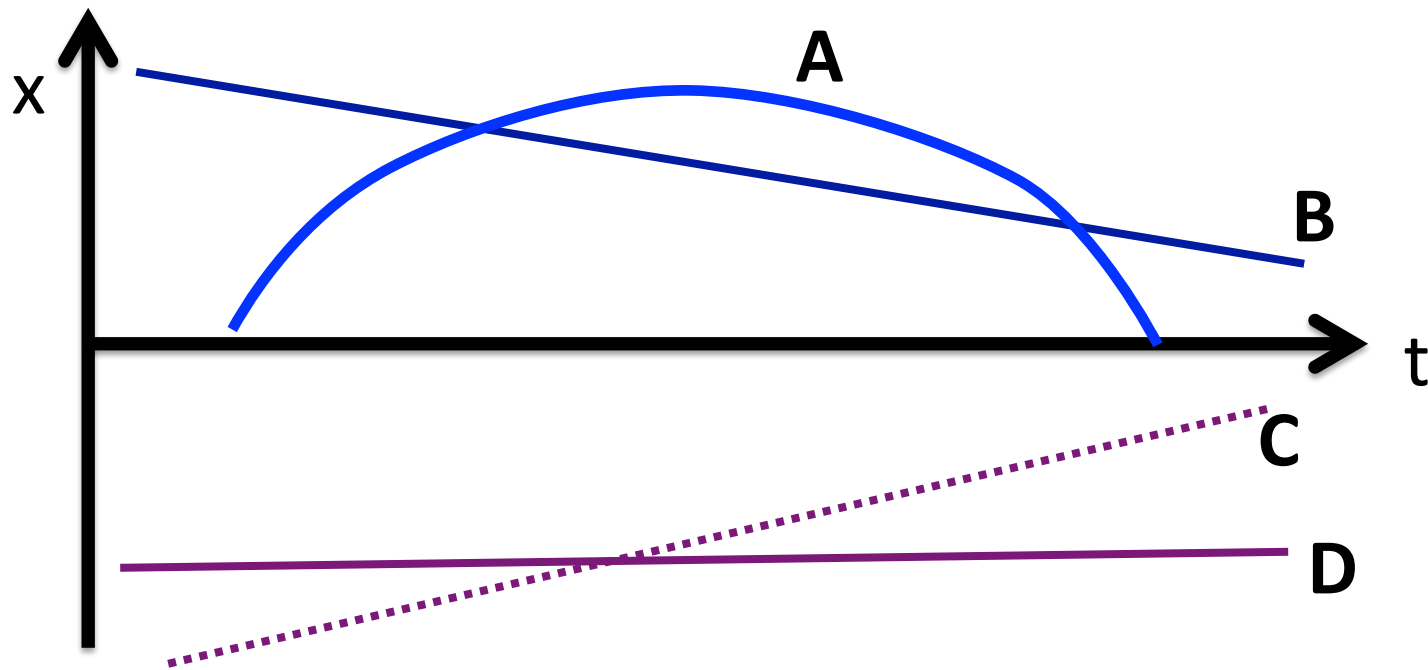


Which motion has constantly changing velocity?



E) None of these, or MORE THAN ONE of them!

Which motion has constant negative velocity?

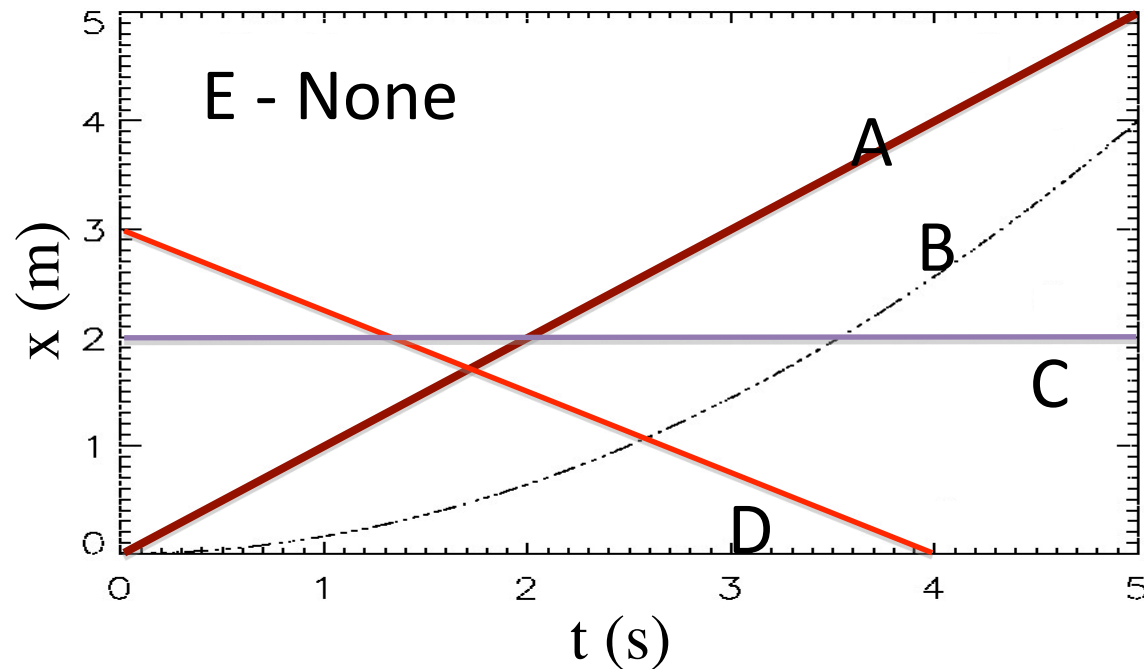


E) None of these, or MORE THAN ONE of them!

Clicker Question

Room Frequency BA

Which motion has constant *negative* velocity?



Only D has a constant negative slope, therefore constant negative velocity.

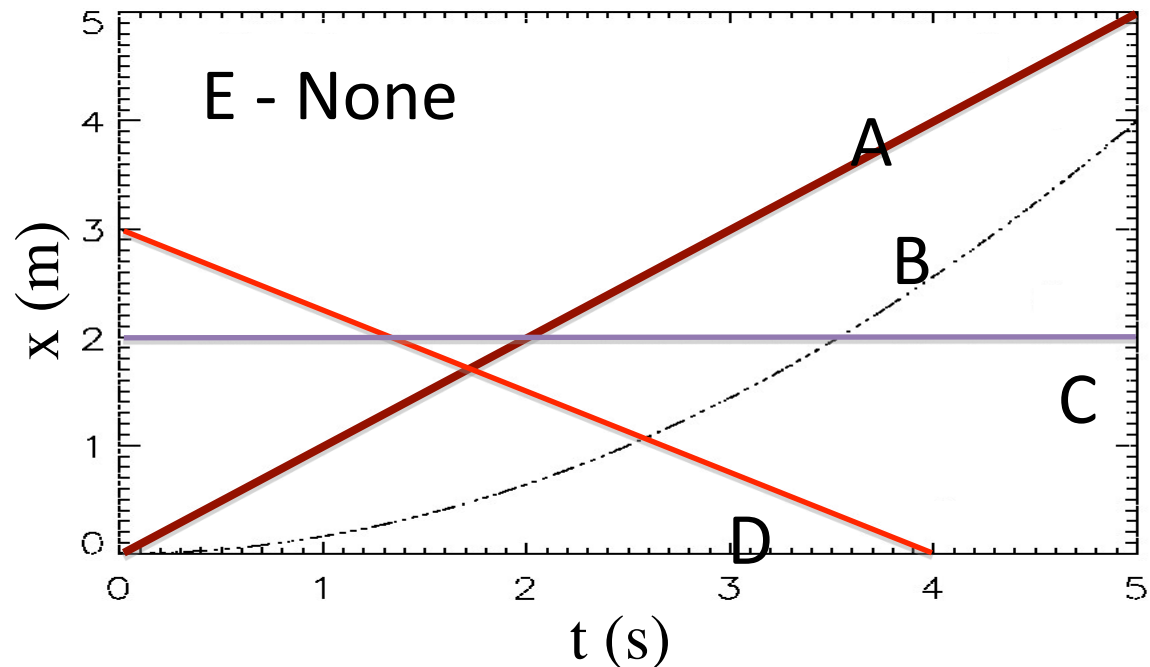
Jan. 23, 2013

Clicker Question

Room Frequency BA

The velocity of object D is approximately?

- A) -1.33 m/s
- B) -0.75 m/s
- C) 0.0 m/s
- D) +0.75 m/s
- E) +1.33 m/s



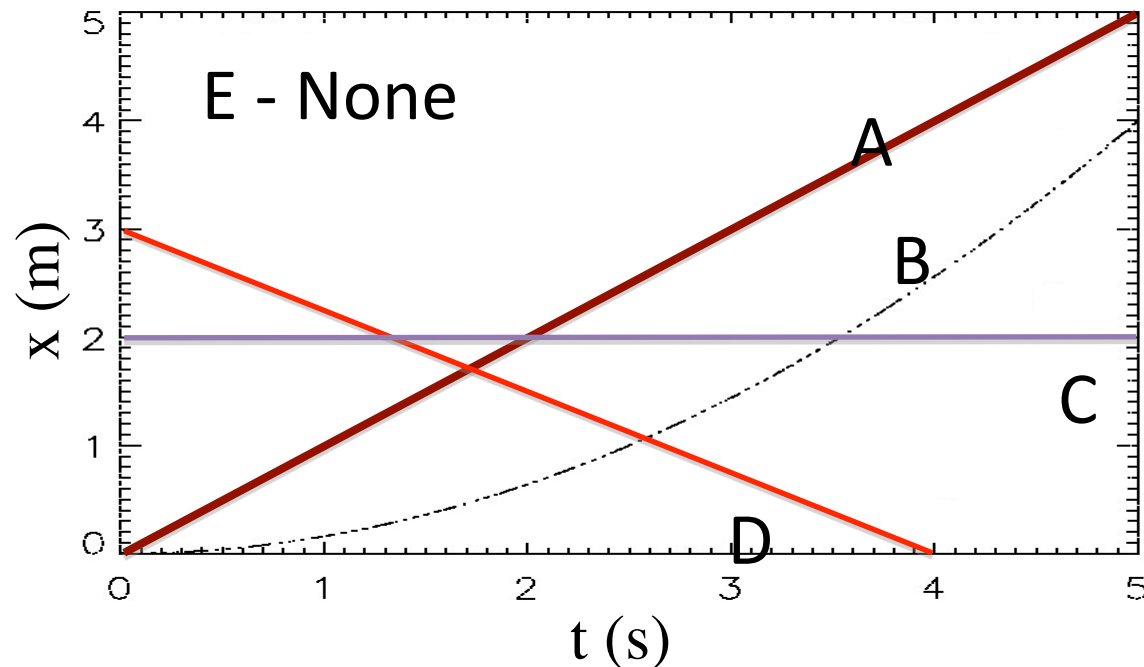
B: The slope of line D is $\Delta x/\Delta t = (-3.0 \text{ m})/(+4\text{s}) = -0.75 \text{ m/s}$.

Jan. 23, 2013

Clicker Question

Room Frequency BA

Which curve has a velocity changing with time?



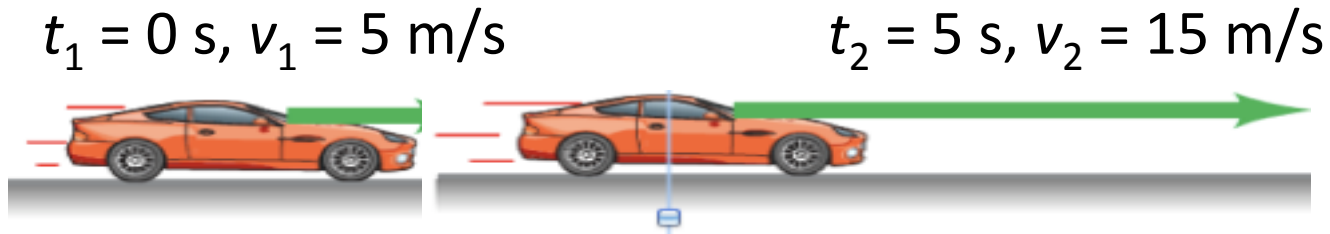
Only B has a changing slope, and thus changing velocity.
What do we call it when an object's velocity is changing?

Jan. 23, 2013

10

A car is initially moving at +5 m/s.
Five seconds later it is moving at +15 m/s.

What is its average acceleration?

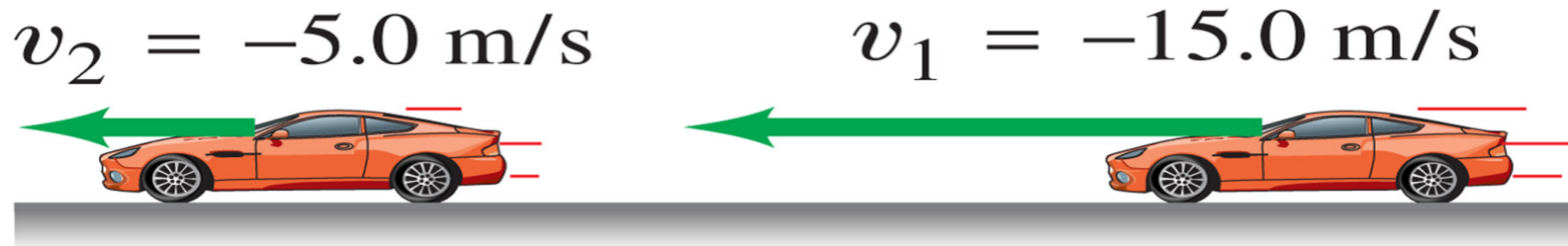


- A) +5 m/s
- B) +2 m/s
- C) +2 m/s²
- D) -2 m/s²
- E) -5 m/s²

$$a = \frac{\Delta v}{\Delta t} = \frac{v_2 - v_1}{t_2 - t_1} = \frac{(15 - 5) \text{ m/s}}{(5 - 0) \text{ s}} = +2 \frac{\text{m}}{\text{s}^2}$$

Acceleration is to the right; i.e., positive.

At time $t_1 = 0$ s, a car is moving with velocity -15 m/s (to the left).
At later time $t_2 = 5$ s, the car is moving with velocity -5 m/s.



What is the direction/sign of acceleration?

- A) Right and positive.
- B) Left and negative.
- C) There is no acceleration.
- D) Right and negative.
- E) Left and positive.

$$a = \frac{\Delta v}{\Delta t} = \frac{v_2 - v_1}{t_2 - t_1} = \frac{(-5 - (-15))\text{m/s}}{(5 - 0)\text{s}} = +2 \frac{\text{m}}{\text{s}^2}$$

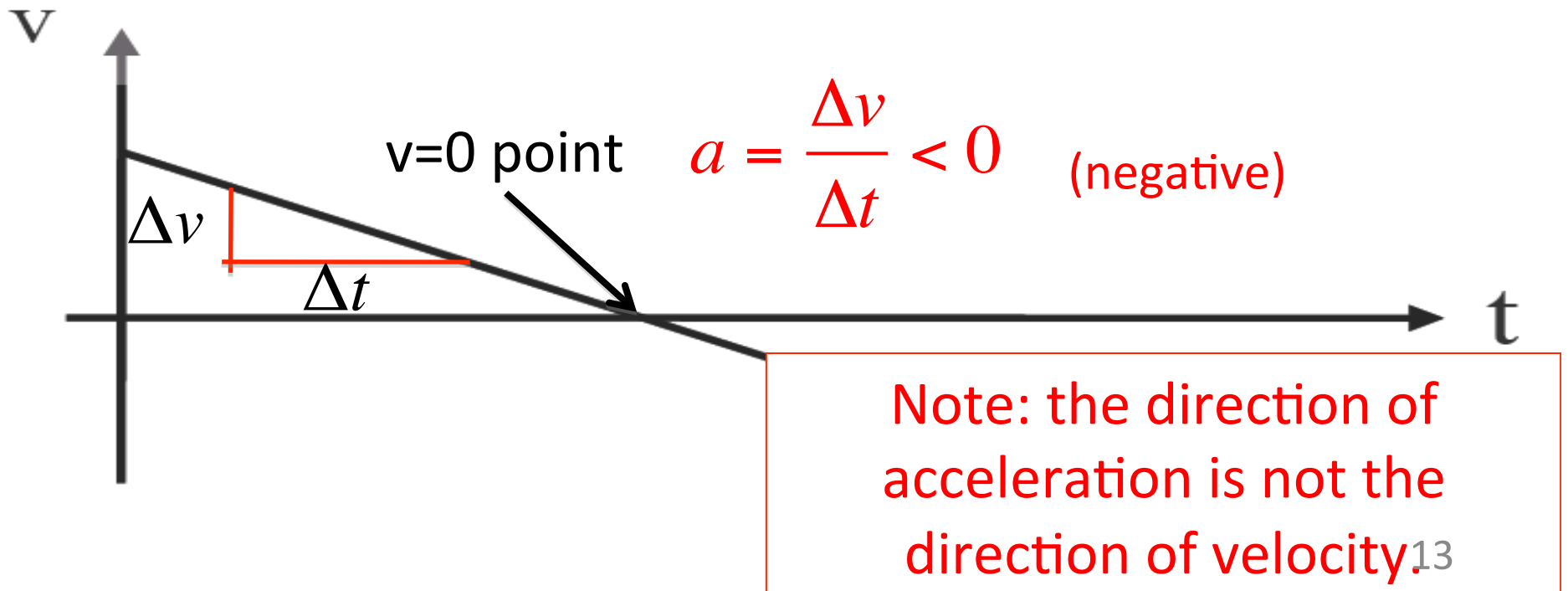
Note: the direction of acceleration is not the direction of velocity.

At the moment when velocity is zero,
what is the sign of acceleration?

A) Positive

B) Negative

C) Zero

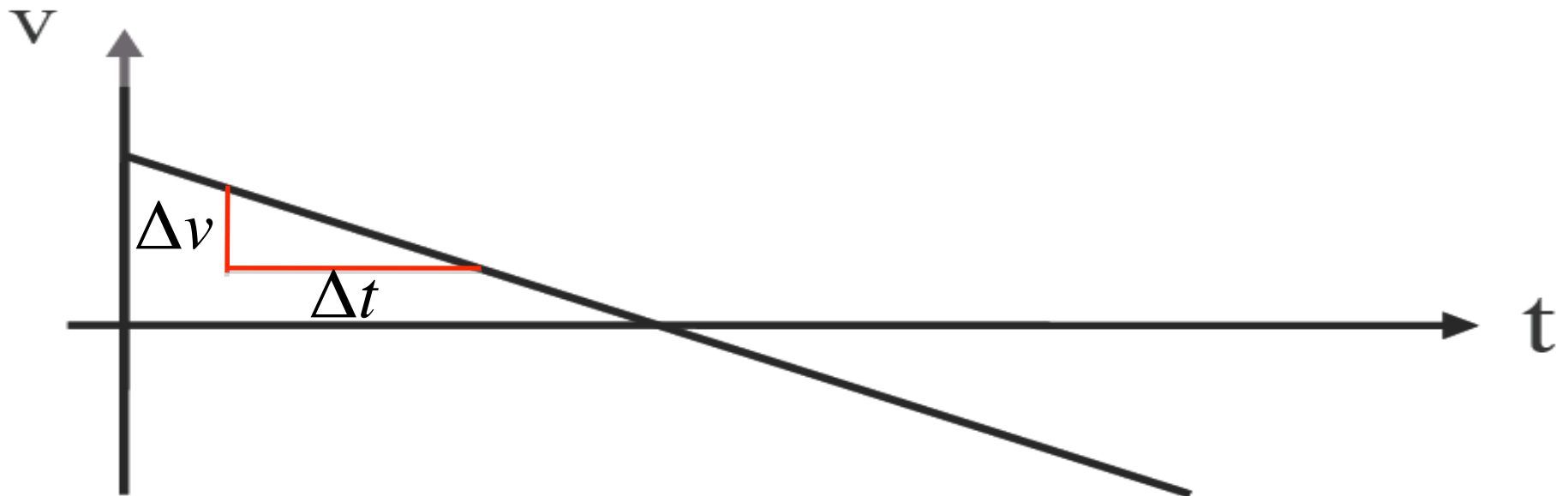


Is the acceleration constant throughout the time that the velocity is changing?

A) Yes, $a = \text{constant}$

B) No, a is changing

C) Not sure?!

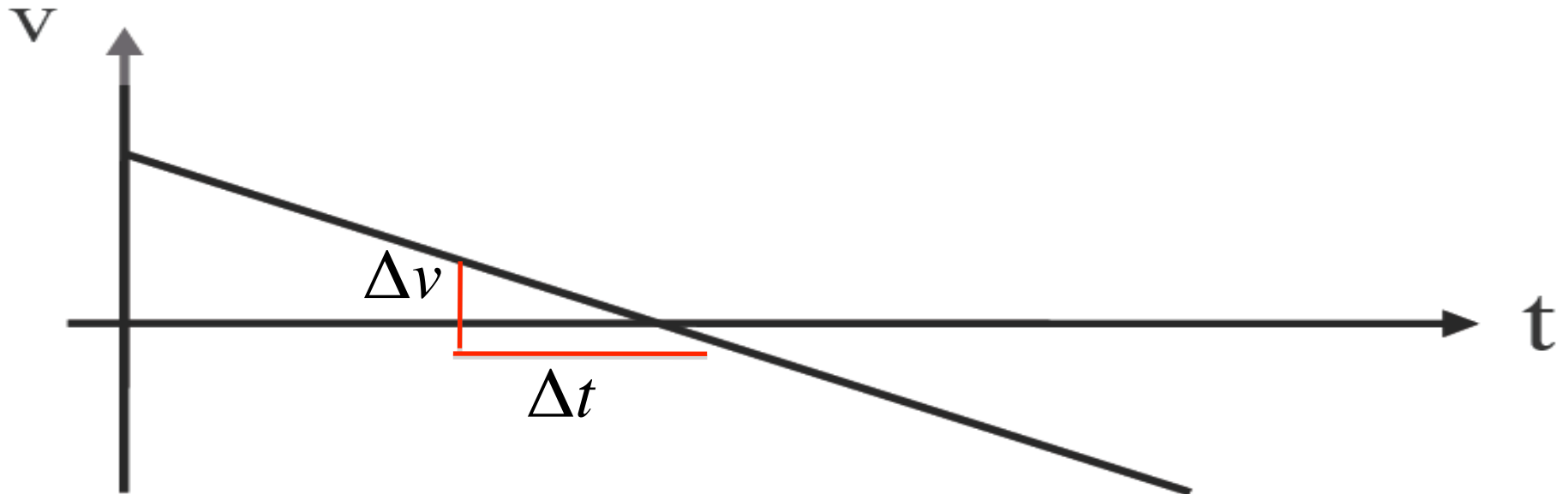


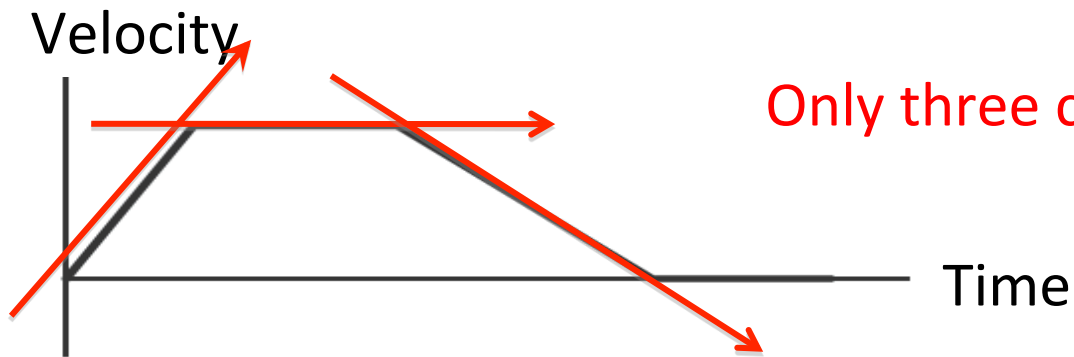
Is the acceleration constant throughout the time that the velocity is changing?

A) Yes, $a = \text{constant}$

B) No, a is changing

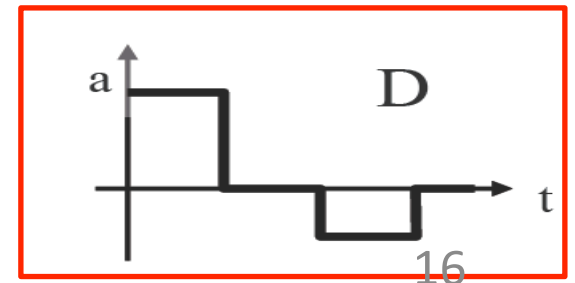
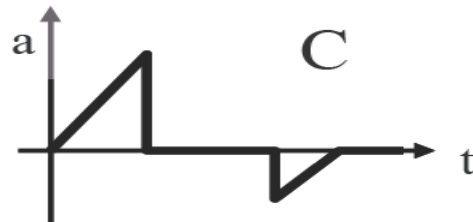
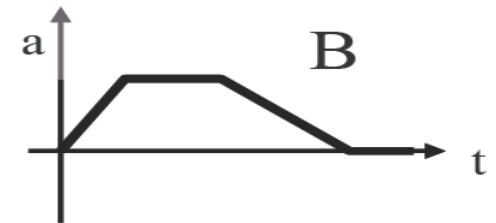
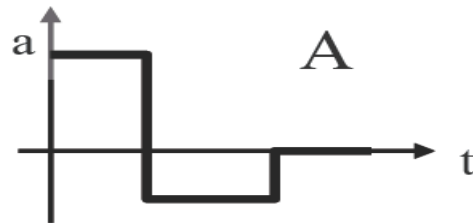
C) Not sure?!



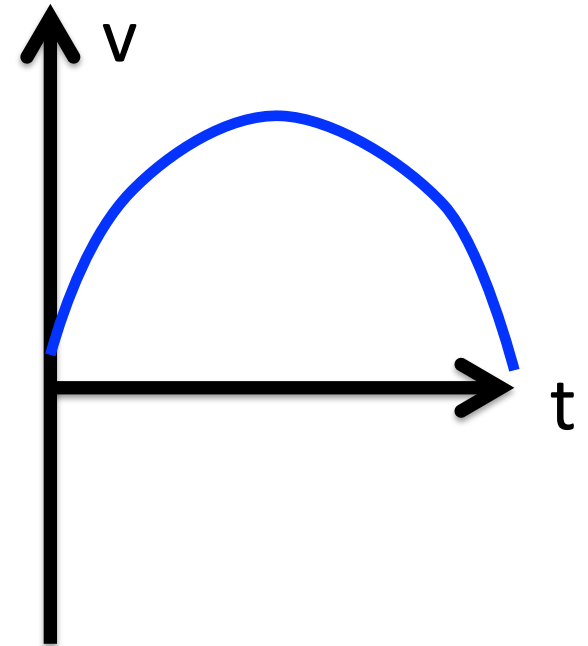


Only three constant slopes (accelerations):
positive, zero, negative.

Which graph
represents the
correct acceleration
versus time graph?

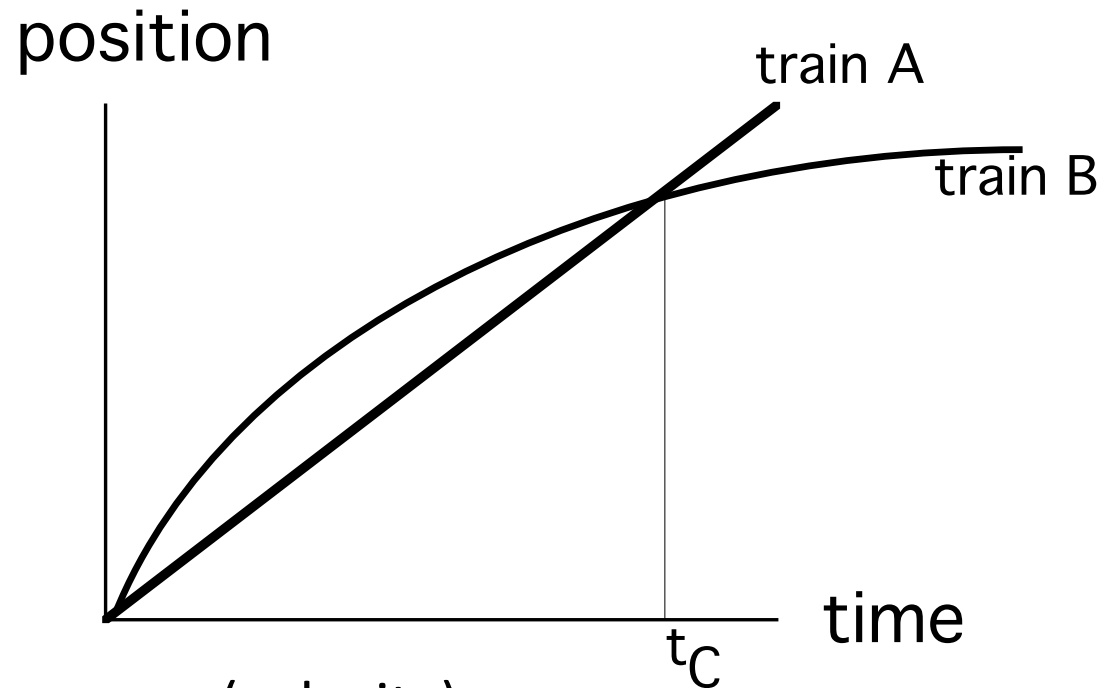


Which graph represents the correct acceleration versus time graph?



Two trains run on parallel tracks, moving as shown:

Which statement below is TRUE?



- A) At t_c , both trains have the same v (velocity)
- B) Both trains speed up all the time.
- C) Both trains have the same v at some time before t_c .
- D) At some time, both trains have the same acceleration.
- E) None of the above statements is true, or MORE than one is true.