Web**Assign**
CH02-HW02-SP12 (Homework)

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PHYS 172-SPRING 2012, Spring 2012
Instructor: Virendra Saxena

Current Score : 7 / 7   **Due :** Thursday, January 19 2012 11:59 PM EST

The due date for this assignment is past. Your work can be viewed below, but no changes can be made.

Important! Before you view the answer key, decide whether or not you plan to request an extension. Your Instructor may *not* grant you an extension if you have viewed the answer key. Automatic extensions are not granted if you have viewed the answer key.

View Key

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1. 2/2 points | Previous Answers   MI3 2.3.X.010

You're driving on a straight road (in the $+x$ direction) at a constant speed of 32 m/s. In 11 seconds, you speed up to 37 m/s to pass a truck.

(a) Assuming your car speeds up at a constant rate (constant force by the road on the tires), what is your average x component of velocity $v_{\text{avg},x}$ during this maneuver?

$v_{\text{avg},x} = \boxed{34.5}$ ✓   m/s

(b) How far do you go during this maneuver?

total distance = $\boxed{379.5}$ ✓   m

- *Read the eBook*
- Section 2.3

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2. 3/3 points | Previous Answers   MI3 2.3.X.009

On a straight road (taken to be in the $+x$ direction) you drive for an hour at 40 km per hour, then quickly speed up to 110 km per hour and drive for an additional two hours.

(a) How far do you go (Δx)?

total distance = $\boxed{260}$ ✓   km

(b) What is your average x component of velocity ($v_{avg,x}$)

$v_{avg,x} = \boxed{86.67}$ ✓   km/hr

(c) Why isn't $v_{avg,x}$ equal to the arithmetic average of your initial and final values of v_x, (40+110)/2 = 75 km per hour?

- ⦿ The arithmetic mean is not a valid way to calculate the average in this situation.
- ○ The initial velocity isn't zero.
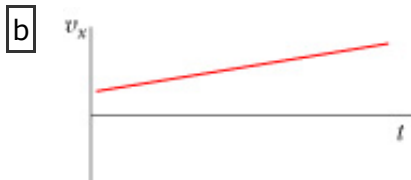- ○ The velocity isn't constant.

✓

- *Read the eBook*
- Section 2.3

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3. 1/1 points | Previous Answers   MI3 2.3.X.045

For each graph of v_x vs. t in the left column, choose the letter (a-i) corresponding to the appropriate description of motion. Not all descriptions will be used. Assume the usual coordinate system (+x to the right, +y up, +z out of the page).

b v_x a. A cart moves to the left, gradually speeding up.

h v_x b. A cart moves to the right, gradually speeding up.

g v_x c. A cart moves to the left, gradually slowing down.

e v_x d. A cart moves to the right, gradually slowing down, stops, and moves to the left, speeding up.

d v_x e. A cart moves to the left, gradually slowing down, stops, and moves to the right, speeding up.

a v_x f. A cart moves to the right, gradually slowing down.

g. A cart moves to the right at constant speed.

h. A cart moves to the left at constant speed.

i. A cart remains stationary and does not move.

✔

- *Read the eBook*
- [Section 2.3](#)

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4. 1/1 points | [Previous Answers](#)   MI3 2.4.X.011

The *x* component of the momentum of an object is observed to increase with time:
At $t = 0$ s, = 30 kg · m/s
At $t = 1$ s, = 40 kg · m/s
At $t = 2$ s, = 50 kg · m/s
At $t = 3$ s, = 60 kg · m/s
What can you conclude about the *x* component of the net force acting on the object during this time?

- ⚪ Not enough information is given.
- ⚪ $F_{net,x}$ is zero.
- 🔘 $F_{net,x}$ is constant.
- ⚪ $F_{net,x}$ is increasing with time.
- ⚪ $F_{net,x}$ is decreasing with time.

✔

- *Read the eBook*
- [Section 2.4](#)