

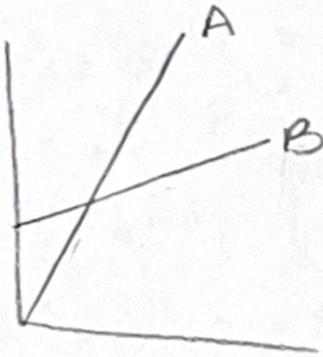
Homework 2.5

Name: SOLUTIONS

Write questions on post-it notes and show work for all calculations. If asked to "explain", please justify with a physics fact, beginning your justification with the fact and then connecting the fact to the situation as we did in Unit 1. Please underline the fact in your explanation.

- Read pp.32-35, including Example 2.1 on p.33.
- Do p.58 #4, 5, 6
- Do p.59 #4
- Check your work online at www.physicsbydiscovery.com

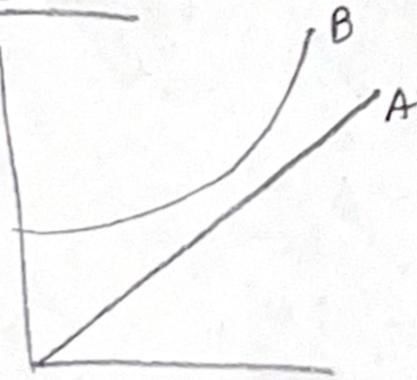
p.58 #4



a) To determine how fast an object is moving, look at the steepness of the position-time graph. Since A has a steeper slope at $t=1s$ than B, A has greater speed.

b) Same fact as (a). Since A and B never have the same steepness (slope), they never have the same speed.

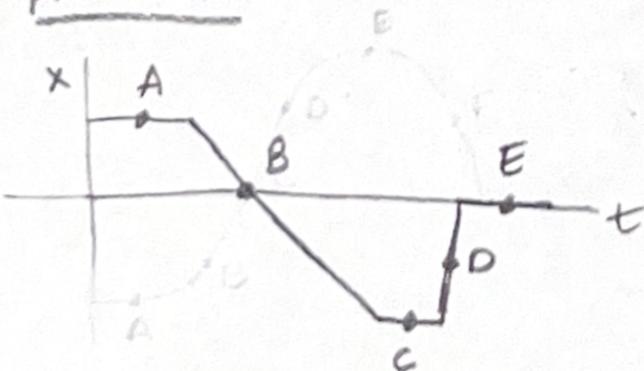
p.58 #5



a) Same fact as [↑] At $t=1s$, the steepness of A is greater than the steepness of B, so A has a greater speed than B at that time.

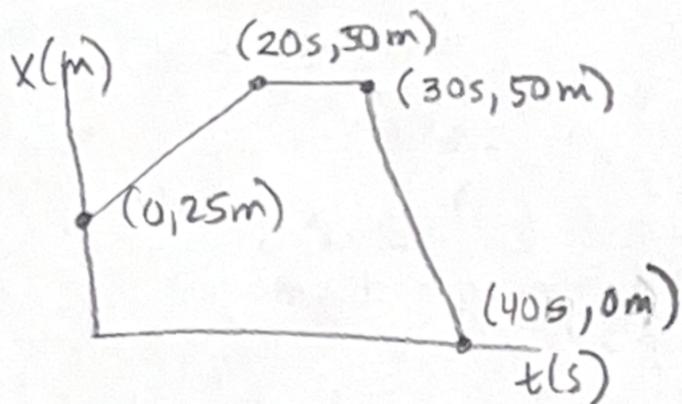
b) same fact as all above. Therefore, the objects have the same speed when the steepness is the same, which occurs at $t=3s$.

p.58 #6



- a. B
- b. D
- c. A, C, E
- d. B

P. 59 # 4



Velocity at $t=10\text{s}$

$$v_x = \text{slope} = \frac{\Delta x}{\Delta t}$$

$$v_x = \frac{50\text{m} - 25\text{m}}{20\text{s} - 0\text{s}}$$

$$v_x = \frac{25\text{m}}{20}$$

$$v_x = 1.25\text{ m/s}$$

Velocity $\vec{v} = (1.25\text{ m/s}, +x\text{-direction})$

Velocity at $t=25\text{s}$

$\vec{v} = 0$, because the slope of the x vs t graph is 0.

Velocity at $t=35\text{s}$

$$v_x = \frac{\Delta x}{\Delta t} = \text{slope}$$

$$v_x = \frac{0\text{m} - 50\text{m}}{10\text{s}}$$

$$v_x = -5\text{ m/s}$$

$\vec{v} = (5\text{ m/s}, \text{negative } x\text{-direction})$