

Class Study 2

KEY

Mechanics I - 2018-2019

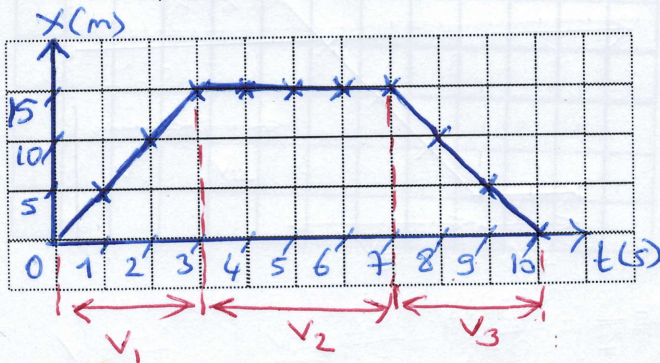
Full name:

Question 1

The table below shows the changes in the velocity of a moving object with respect to time.

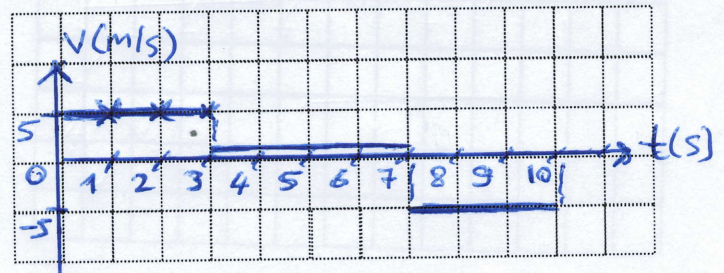
Time(s)	0	1	2	3	4	5	6	7	8	9	10
position (m)	0	5	10	15	15	15	15	15	10	5	0

a. Plot the position - time graph



$$V = \frac{\Delta x}{\Delta t} \quad v_1 = \frac{\Delta x_1}{\Delta t_1} = \frac{15-0}{3-0} = \frac{15}{3} = 5 \frac{\text{m}}{\text{s}}$$

b. Plot the velocity - time graph



$$v_2 = \frac{\Delta x_2}{\Delta t_2} = \frac{15-15}{7-3} = \frac{0}{4} = 0 \frac{\text{m}}{\text{s}}$$

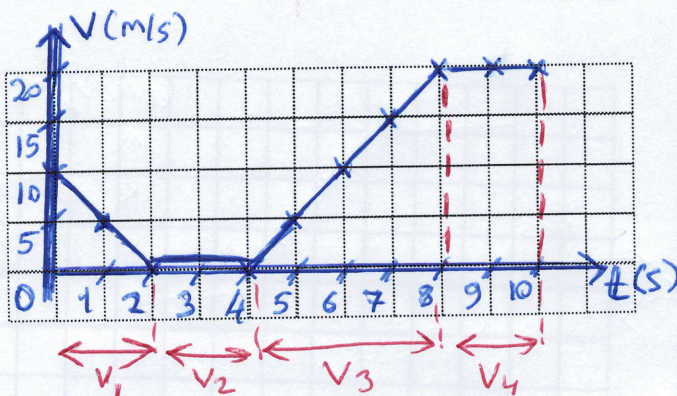
$$v_3 = \frac{\Delta x_3}{\Delta t_3} = \frac{0-15}{10-7} = \frac{-15}{3} = -5 \frac{\text{m}}{\text{s}}$$

Question 2

The table below shows the changes in the velocity of a moving object with respect to time.

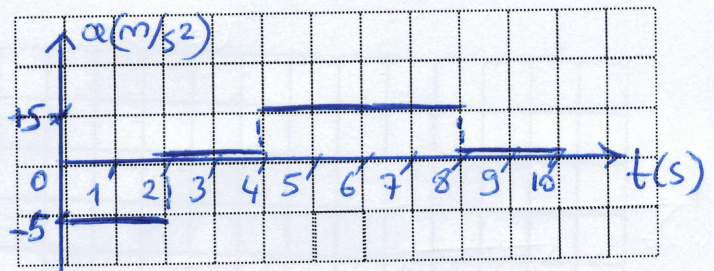
Time(s)	0	1	2	3	4	5	6	7	8	9	10
Velocity (m/s)	10	5	0	0	0	5	10	15	20	20	20

a. Plot the velocity - time graph



$$a = \frac{\Delta v}{\Delta t} \quad a_1 = \frac{\Delta v_1}{\Delta t_1} = \frac{0-10}{2-0} = \frac{-10}{2} = -5 \frac{\text{m}}{\text{s}^2}$$

b. Plot the acceleration - time graph



$$a_2 = \frac{\Delta v_2}{\Delta t_2} = \frac{0-0}{4-2} = 0 \quad a_3 = \frac{\Delta v_3}{\Delta t_3} = \frac{20-0}{8-4} = \frac{20}{4} = 5 \frac{\text{m}}{\text{s}^2}$$

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$$a_4 = \frac{\Delta v_4}{\Delta t_4} = \frac{20-20}{10-8} = \frac{0}{2} = 0 \frac{\text{m}}{\text{s}^2}$$