Class 10c

Physics

Monday 22 Nov 2025

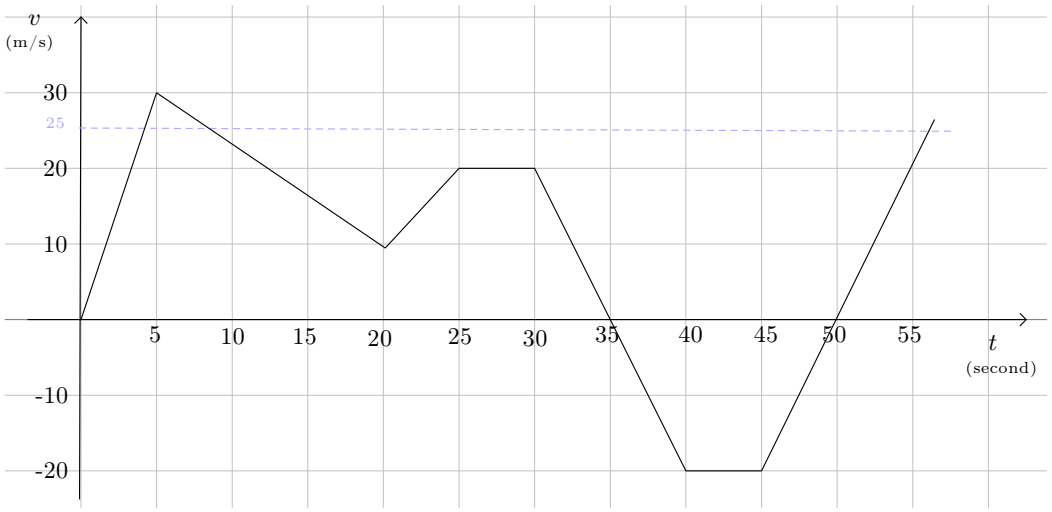
Ex for test1

Total: / 30 marks

ANSWERS

Question 1 *[20 marks]*

The following graphics shows the ***velocity*** of a bicycle walking on a road for t between 0 and 57s



1) What is the *velocity* of the bike at $t = 20\,\text{sec}$? 10 m/s

2) Estimate when, for the third time the velocity of the bike reaches 90km/h ? $t \cong 57s$

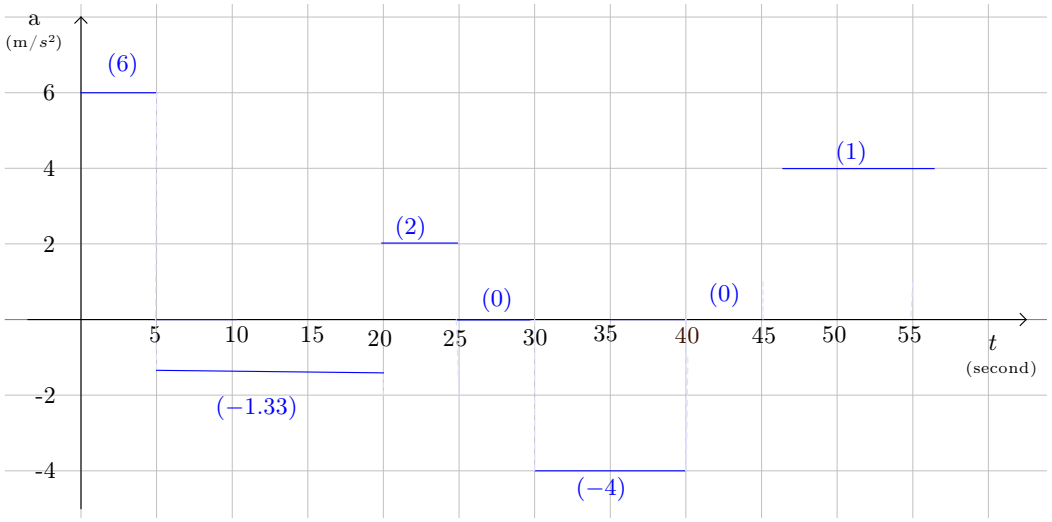
3) What is the *displacement* of the bicycle for $0 \leqslant t \leqslant 30\,s$? 75+300+75+100=550m

5) What is the *average velocity* of the bike for $0 \leqslant 1 \leqslant 45\,s$? $V_A = \frac{550+50-50-100}{45} = 10\text{m/s}$

6) Complete the table on the right by finding all the *accelerations* (with correct unit)

7) Based on your precedant answers, complete the following graphics

time	accelerat
$0 \leqslant t \leqslant 5\,s$	$6m/s^2$
5⩽t⩽20 s	$-1.33m/s^2$
$20 \leqslant t \leqslant 25s$	$2m/s^2$
$25 \leqslant t \leqslant 30s$	$0m/s^2$
$30 \leqslant t \leqslant 40s$	$-4m/s^2$
$40 \leqslant t \leqslant 45s$	$0m/s^2$
$45 \leqslant t \leqslant 57s$	$4m/s^2$



Formula:

(1) Newton's second law: $\vec{F}_{\text{tot}} = \cdots$

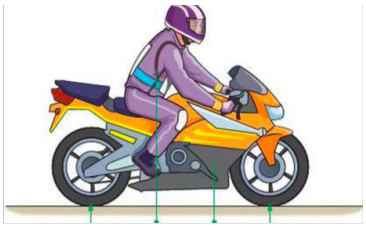
(2) $$a = \frac{v_2 - v_1}{t_2 - t_1}$$

(3) $v_2 = v_1 + at$ with $t = t_2 - t_1$

(4) $d = v_1 t + \frac{1}{2} a t^2$ with $t = t_2 - t_1$

Question 2 *[6 marks]*

A motocycle has velocity $v_1 = 18\,\text{km}/h$ at $t_1 = 5s$ and velocity $v_2 = 198\,\text{km}/h$ at $t_2 = 17.5s$



i) Find the *acceleration* of the motocycle. By formula (2) : $a = \frac{55-5}{17.5-5} = \frac{50}{12.5} = \boxed{4m/s^2}$

ii) Find the *speed* of the motocycle 4s after t_1. By formula (3) : $v_2 = 5 + 4 \times 4 = \boxed{21m/s}$

iii) Find the *distance* moved between t_1 and t_2. By formula (4) : $d = 5\,(12.5) + \frac{1}{2} 4\,(12.5)^2$

$= 62.5 + 312.5 = \boxed{375m}$