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Q 4.

t	y(t)
1	4
2	6
3	5
4	7
5	10

By least square method

(i) Equation of best line (in the least square)

t	y	t^2	t.y
1	4	1	4
2	6	4	12
3	5	9	15
4	7	16	28
5	10	25	50

$\therefore \Sigma t = 15$

$\therefore \Sigma y = 32$

$\therefore \Sigma t^2 = 55$

$\therefore \Sigma ty = 109$

$$\bar{T} = \frac{\Sigma t}{n} = \frac{15}{5} = 3$$

$$\bar{y} = \frac{\Sigma y}{n} = \frac{32}{5} = 6.4$$

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$\Sigma y = an + b\Sigma t \Rightarrow 32 = a(5) + b(15) \rightarrow (1)$

$\Sigma ty = a\Sigma t + b\Sigma t^2 \Rightarrow 109 = a(15) + b(55) \rightarrow (2)$

$\therefore 96 = 15a + 45b \rightarrow (3)$ (Multiplying eq^n (1) by 3)

$\therefore 109 = 15a + 55b \rightarrow (4)$ (Multiplying eq^n (2) by 1)

$\therefore 10b = 13$

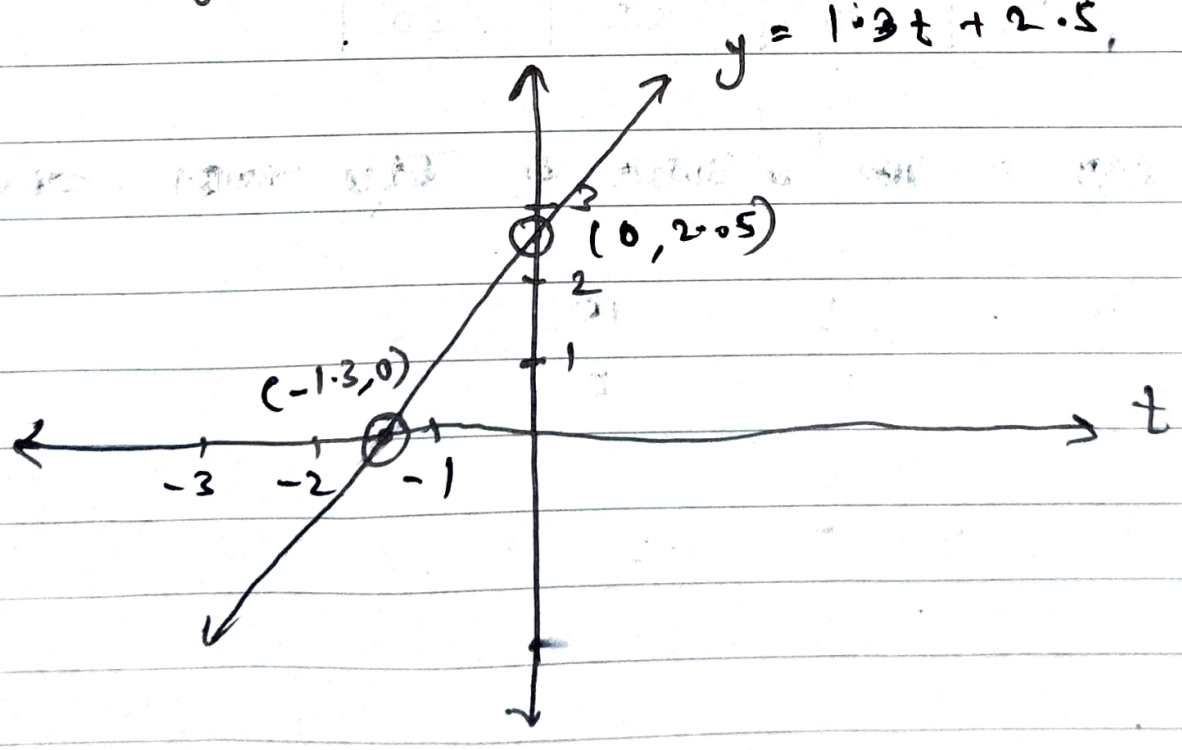
$\boxed{b = 1.3}$

$96 = 15a + 45(1.3)$

$\boxed{a = 2.5}$

$\therefore y = 1.3t + 2.5$

Plot graph from eq^{n}s.



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∴ Least square error

$= (3.8 - 5)^2 + (5.1 - 6)^2 + (6.4 - 5)^2$

$+ (7.7 - 7)^2 + (9 - 10)^2$

$\boxed{= 4.1}$

t	y
1	3.8
2	5.1
3	6.4
4	7.7
5	9