

$$I = \frac{5R}{3} + 5$$

$$I = \frac{E(R_1 + R)}{r(R_1 + R) + R_1 R} = \frac{8(3 + R)}{0,45(3 + R) + 3R}$$

$$\frac{5R + 15}{3} = \frac{8(R + 3)}{0,45(3 + R) + 3R} \Rightarrow$$

$$\frac{5(R + 3)}{3} = \frac{8(R + 3)}{0,45(R + 3) + 3R} \Rightarrow$$

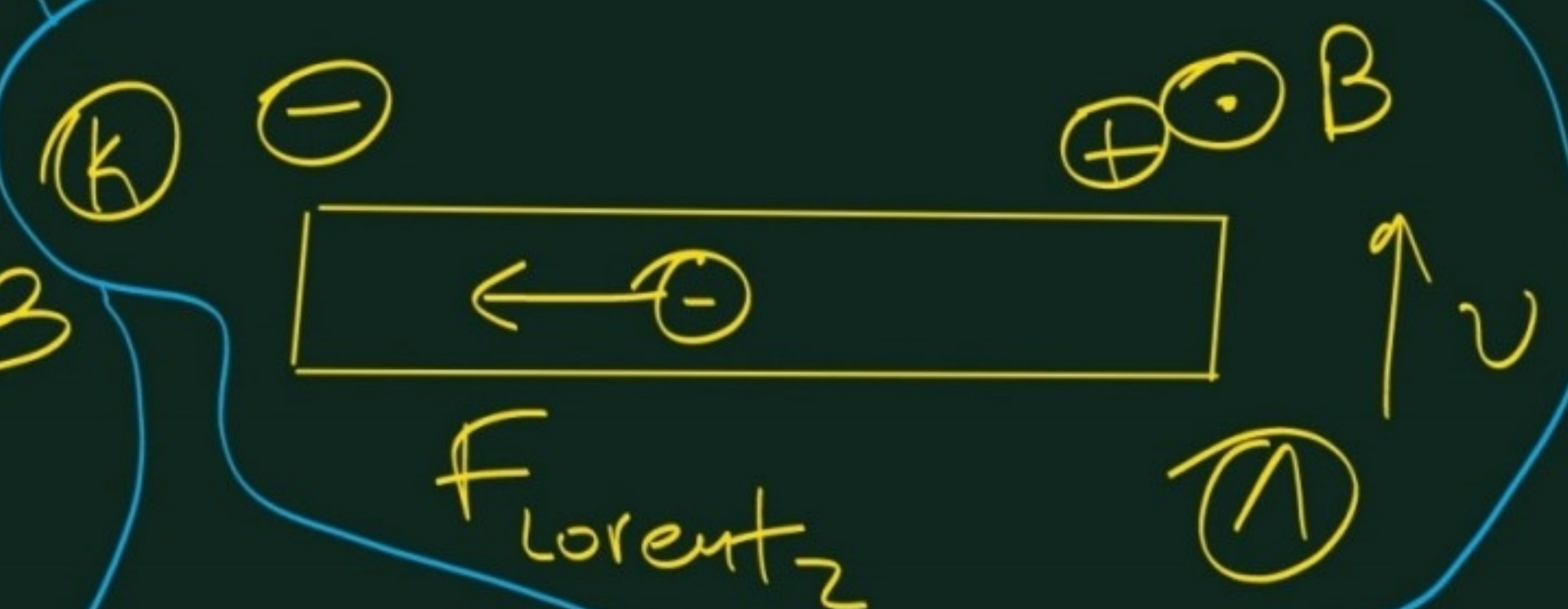
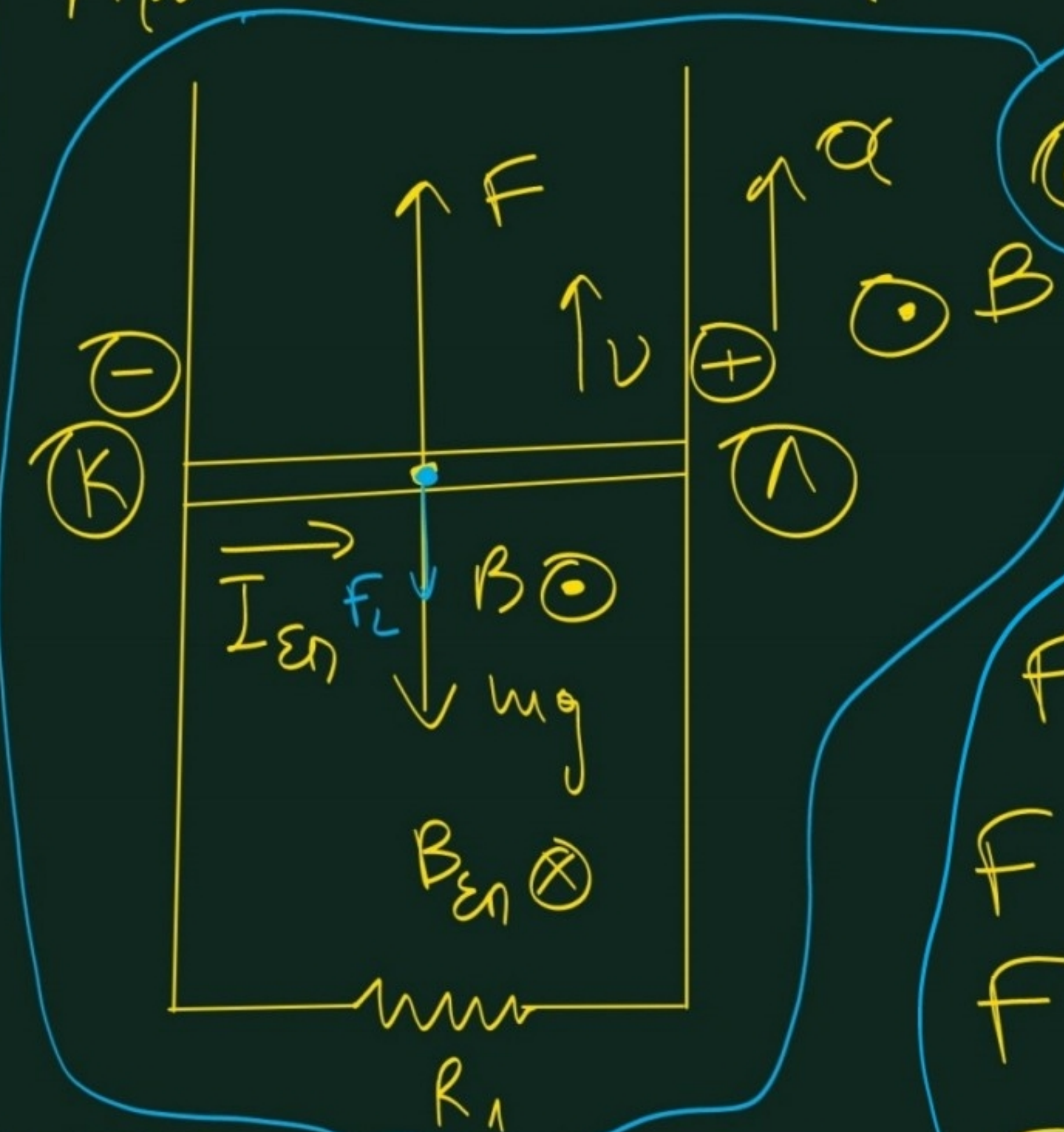
$$2,25 \cdot (R + 3) + 15R = 24 \Rightarrow$$

$$17,25R = 24 - 6,75 \Rightarrow 17,25R = 17,25 \Rightarrow R = 1\Omega$$

$$b) i) OL = 2 - 0,5v \text{ (SI)}$$

Η ταχύτητα γίνεται οριζόντια και σταθερή όταν γίνει $a = 0$

$$\text{Αρα: } 0 = 2 - 0,5v_{op} \Rightarrow v_{op} = 4 \text{ m/s (προς τα δεξιά)}$$



$$\begin{aligned} F - mg &= ma \Rightarrow \\ F - 5 &= 0,5(2 - 0,5v) \Rightarrow \\ F &= 5 + 1 - 0,25v \Rightarrow \\ F &= 6 - 0,25v \text{ (SI)} \end{aligned}$$

$$F_L = 0,25v$$

$$F = 6 \text{ N}$$

$$8) \quad v(t) = 2t + 4$$

$$\frac{\Delta v}{\Delta t} = \frac{v(t) - v(0)}{t - 0} =$$

$$= \frac{2t + 4 - (2 \cdot 0 + 4)}{t} =$$

$$= \frac{2t}{t} = 2 \text{ m/s}^2 \Rightarrow$$

$$a = 2 \text{ m/s}^2 \text{ (correct)}$$

$$9) \quad \Sigma F = ma \Rightarrow F - F_L = ma \Rightarrow$$

$$F - Bil = ma \Rightarrow$$

$$F - 0,1(2t + 3) \cdot 0,5 = 0,15 \cdot 2 \Rightarrow$$

$$F - 0,1t - 0,15 = 0,3 \Rightarrow$$

$$F = 0,1t + 0,45 \text{ (SI)}$$

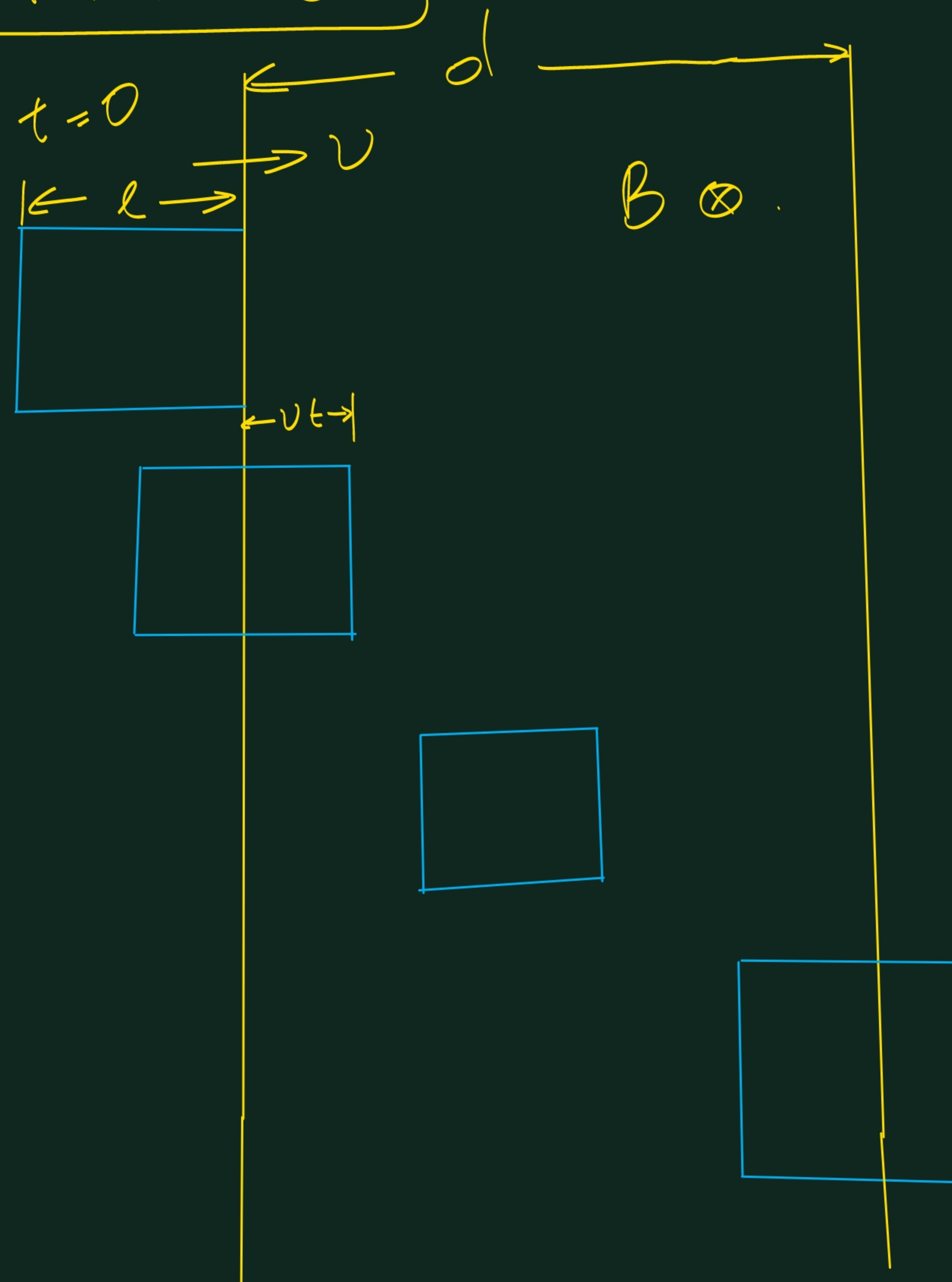
$$P_F = \vec{F} \cdot \vec{v} = F \cdot v = (0,1t + 0,45) \cdot (2t + 4)$$

$$\text{Ap} \alpha: P_F(4) = (0,1 \cdot 4 + 0,45) \cdot (8 + 4) =$$

$$= 0,85 \cdot 12 = 0,8 \cdot 12 + 0,05 \cdot 12 =$$

$$= 9,6 + 0,6 = 10,2 \text{ W}$$

Α64.5.67 σελ. 226.



d) $t=0$ εισαγωγή.

$$t=t_1=\frac{l}{v} \text{ (χρόνος εισόδου)}$$

$$t_2=\frac{d-l}{v} \text{ (χρόνος παραμονής)}$$

$$t_3=\frac{l}{v} \text{ (χρόνος εξόδου)}$$

$$\begin{aligned} \Phi_{\max} &= B l^2 = 0,4 \cdot 0,25^2 = 0,4 \cdot 0,25 \cdot 0,25 = \\ &= 0,1 \cdot 0,25 = 0,025 = \\ &= 2,5 \cdot 10^{-2} \text{ Wb.} \end{aligned}$$

$$t_1 = \frac{0,25}{0,05} = 5 \text{ sec}$$

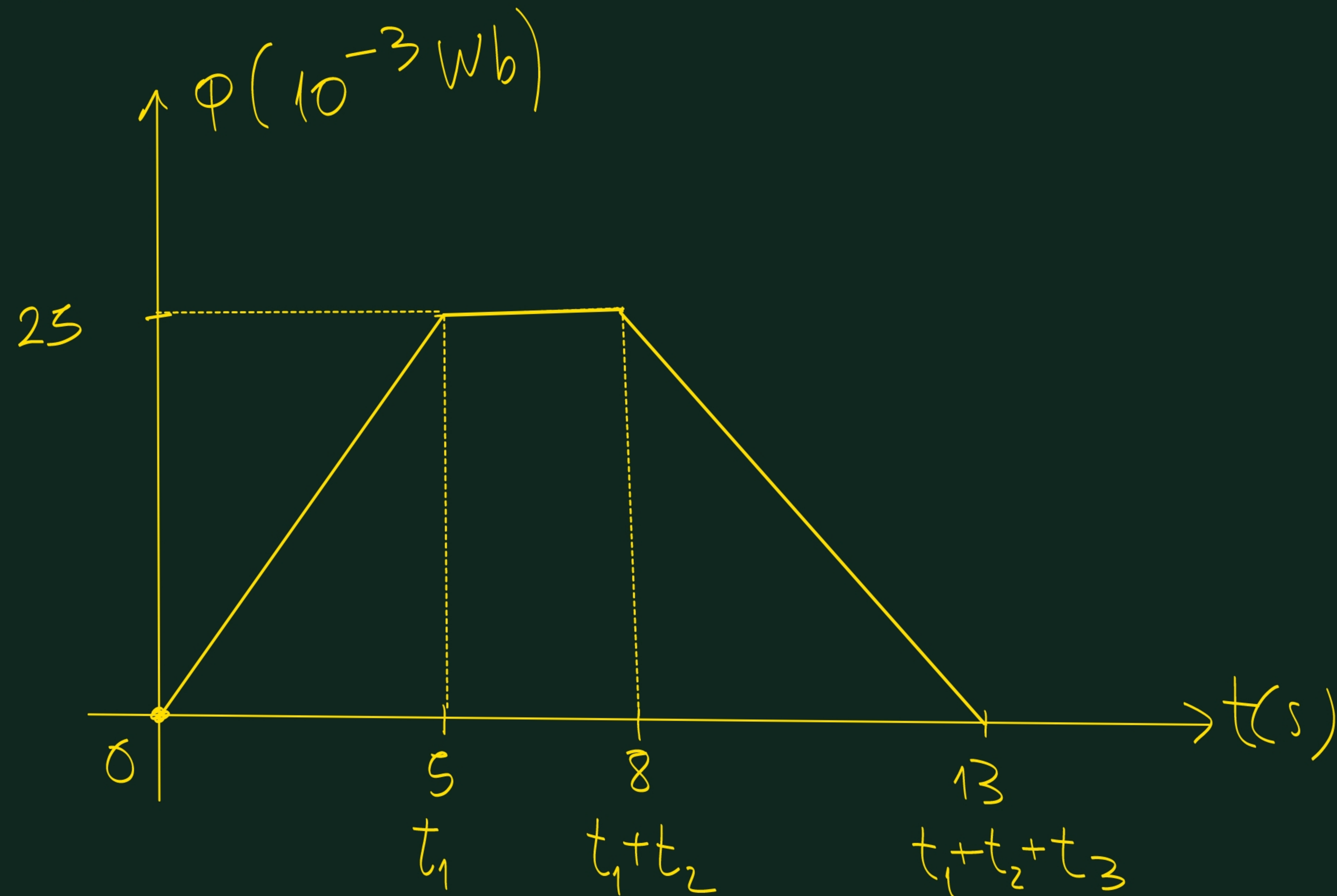
$$t_2 = \frac{0,4 - 0,25}{0,05} = 3 \text{ sec}$$

$$t_3 = 5 \text{ sec.}$$

$$\Phi = B l \cdot v t = 0,4 \cdot 0,25 \cdot 0,05 \cdot t = 0,1 \cdot 0,05 t \Rightarrow$$

$$\Phi(t) = 5 \cdot 10^{-3} t \quad (\text{elcosol})$$

$$\Phi_{\max} = 25 \cdot 10^{-3} \text{ Wb.}$$



$$\Phi = \lambda t + b$$

$$\Phi(8) = 25 \Rightarrow 8\lambda + b = 25$$

$$\Phi(13) = 0 \Rightarrow 13\lambda + b = 0 \Rightarrow$$

$$b = -13\lambda.$$

$$8\lambda - 13\lambda = 25 \Rightarrow \lambda = -5$$

$$b = +65.$$

$$\Phi(t) = -5t + 65 \quad (\text{mWb})$$

$$\Phi(t) = \begin{cases} 5t, & 0 \leq t \leq 5 \text{ sec} \quad (\text{mWb}) \\ 25, & 5 < t \leq 8 \text{ sec} \\ -5t + 65, & 8 < t \leq 13 \text{ sec} \end{cases}$$