

Nama : Eva Maretha Naila

NPM = 2313022029

Kelas = 23A

Matkul = Fisika Modern

Quis 1 Fisika Modern

1) Diketahui :

$$v = 106 \text{ km/jam} = 29,44 \text{ m/s}$$

$$t = 0 \text{ s}$$

$$t' = 30 \text{ s}$$

$$x' = 1 \text{ km} = 1000 \text{ m}$$

Ditanya a. (x', t')

b. (x'', t'')

Jawab :

$$a. (x', t') = (1000 \text{ m}, 30 \text{ s})$$

$$b. x'' = x' - vt$$

$$= 1000 - (29,44)(30)$$

$$= 1000 - 883,2$$

$$= 116,8 \text{ m}$$

$$(x'', t'') = (116,8 \text{ m}, 30 \text{ s})$$

$$t'', t' = 30 \text{ s}$$

2) Diketahui :

$$v_b = 15 \text{ m/s (berlawanan arah)}$$

$$v_k = 72 \text{ km/jam} = 20 \text{ m/s}$$

Ditanya = v_{bs} ?

Jawab :

$$v_{bs} = v_k - v_b$$

$$= 20 - 15$$

$$= \underline{5 \text{ m/s}}$$

3) Diketahui :

$$v_A = 60 \text{ km/jam}$$

$$v_B = 40 \text{ km/jam}$$

Ditanya = a. v_{AB}

b. v_{BA}

Jawab :

$$\rightarrow a. v_{AB} = v_A - v_B$$

$$= 60 - 40$$

$$\begin{aligned}
 &= 20 \text{ km/jam (searah)} \\
 \Rightarrow b. v_{BA} &= v_B - v_A \\
 &= 40 - 60 \\
 &= -20 \text{ km/jam (berlawanan)}
 \end{aligned}$$

4) Diketahui

$$x' = 5 \text{ m}$$

$$v = 36 \text{ km/jam} = 10 \text{ m/s}$$

$$t' = 5 \text{ s}$$

$$\begin{aligned}
 \text{ditanya} &= a. (x', t') \\
 &= b. (x, t)
 \end{aligned}$$

Jawab :

$$a. (x', t) = (5, 5)$$

$$\begin{aligned}
 b. x &= (v \cdot t') + x' & | & t = t' = 5 \text{ s} \\
 &= (10 \cdot 5) + 5 \\
 &= 55 \text{ m}
 \end{aligned}$$

$$(x, t) = (55, 5)$$

5) Diketahui

$$d = 100 \text{ m}$$

$$v_A = 60 \text{ m/s}$$

$$v_p = 80 \text{ m/s}$$

$$\text{ditanya} = a. x?$$

$$b. t'?$$

Jawab :

$$\begin{array}{l|l|l|l}
 a) t = \frac{d}{v_p} & x = v_A \cdot t & b) v_y = v_p \sin \theta & t' = \frac{d}{v_y} \\
 = \frac{100 \text{ m}}{80 \text{ m/s}} & = 60 \cdot 1,25 & = 80 \sin 30^\circ & = \frac{100 \text{ m}}{63,84 \text{ m/s}} = 1,57 \text{ s} \\
 = 1,25 \text{ s} & = 75 \text{ m} & = 80 \cdot 0,798 & \\
 & & = 63,84 \text{ m/s} &
 \end{array}$$

6) Diketahui

$$c = c$$

$$u = u$$

$$L = 2L \text{ (Balok Balik)}$$

$$\text{ditanya} a. t_{\text{total arus?}}$$

$$b. \text{Perbandingan } t_{\text{total arus dgn total tegak lurus}}$$

Jawab :

$$a) v_{\text{berlawanan}} = c - u$$

$$t_{\text{pergi}} = \frac{L}{c - u}$$



$$v_{\text{searah}} = c + u$$

$$t_{\text{kembali}} = \frac{L}{c+u}$$

$$t_{\text{total arus}} = \frac{L}{c-u} + \frac{L}{c+u}$$

$$= \frac{L(c+u) + L(c-u)}{(c-u)(c+u)} = \frac{Lc + Lu + Lc - Lu}{c^2 - u^2} = \frac{2Lc}{c^2 - u^2}$$

$$b) c^2 = u^2 + v^2$$

$$v^2 = c^2 - u^2$$

$$v = \sqrt{c^2 - u^2}$$

$$t_{\text{seberang}} = \frac{L}{\sqrt{c^2 - u^2}}$$

$$t_{\text{total tegak lurus}} = 2 \times \frac{L}{\sqrt{c^2 - u^2}}$$

$$\frac{T_{\text{total arus}}}{T_{\text{total tegak lurus}}} = \frac{\frac{2Lc}{c^2 - u^2}}{2 \times \frac{L}{\sqrt{c^2 - u^2}}}$$

$$= \frac{c}{c^2 - u^2} \times \sqrt{c^2 - u^2}$$

$$= \frac{c \sqrt{c^2 - u^2}}{c^2 - u^2}$$

$$= \frac{c}{\sqrt{c^2 - u^2}}$$

$$= \frac{c}{\sqrt{c^2 - u^2}}$$

$T_{\text{total Arus}} (\text{belakawan + searah}) > T_{\text{total tegak lurus}} (\text{bolak balik})$