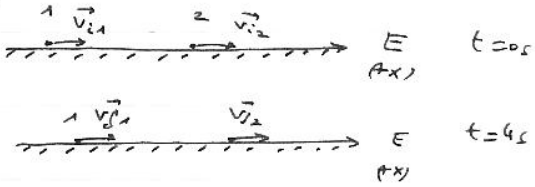
(2.17).




a). Pour la voie 1 : $a_1 = \dfrac{v_{f1} - v_{i1}}{4} = 2$ (1) (accélération moyenne = accélération instantanée)

Pour la voie 2 : $a_2 = \dfrac{v_{f2} - v_{i2}}{4} = 4$ (2)

$v_{f1} = v_{f2}$ (3)

On cherche $v_{i2} - v_{i1}$.

(1) : $v_{f1} - v_{i1} = 8$

(2) : $v_{f2} - v_{i2} = 16$

$\Rightarrow$ (2) − (1) : $\overbrace{v_{f2} - v_{f1}}^{=0} - v_{i2} + v_{i1} = 8$

$\Rightarrow -v_{i2} + v_{i1} = 8 \text{ m/s}$

ou $v_{i2} - v_{i1} = -8 \text{ m/s}$

b). $v_{i1} > v_{i2}$ $\Rightarrow$ la (1) va plus vite que la (2)

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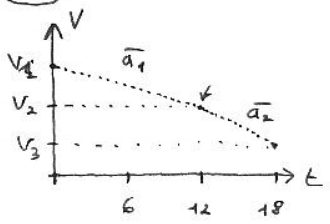
(2.18)




On cherche $v_2$.

$\bar{a}_1 = \dfrac{v_2 - v_1}{12}$ (1)

$\bar{a}_2 = \dfrac{v_3 - v_2}{6}$ (2)

$\dfrac{\bar{a}_1}{\bar{a}_2} = 1{,}5$ (3)

$\dfrac{(1)}{(2)}$ : $\dfrac{\bar{a}_1}{\bar{a}_2} = \dfrac{v_2 - v_1}{12} \cdot \dfrac{\cancel{6}^{1}}{v_3 - v_2} = 1{,}5 \Rightarrow \dfrac{v_2 - v_1}{v_3 - v_2} = 3 \Rightarrow v_2 - v_1 = 3(v_3 - v_2)$

$\Rightarrow v_2 - v_1 = 3v_3 - 3v_2 \Rightarrow 4v_2 = 3v_3 + v_1 \Rightarrow v_2 = \dfrac{1}{4}(3v_3 + v_1) = \dfrac{1}{4}(3 \cdot 92 + 115) \simeq 97{,}8 \dfrac{\text{km}}{\text{h}}$