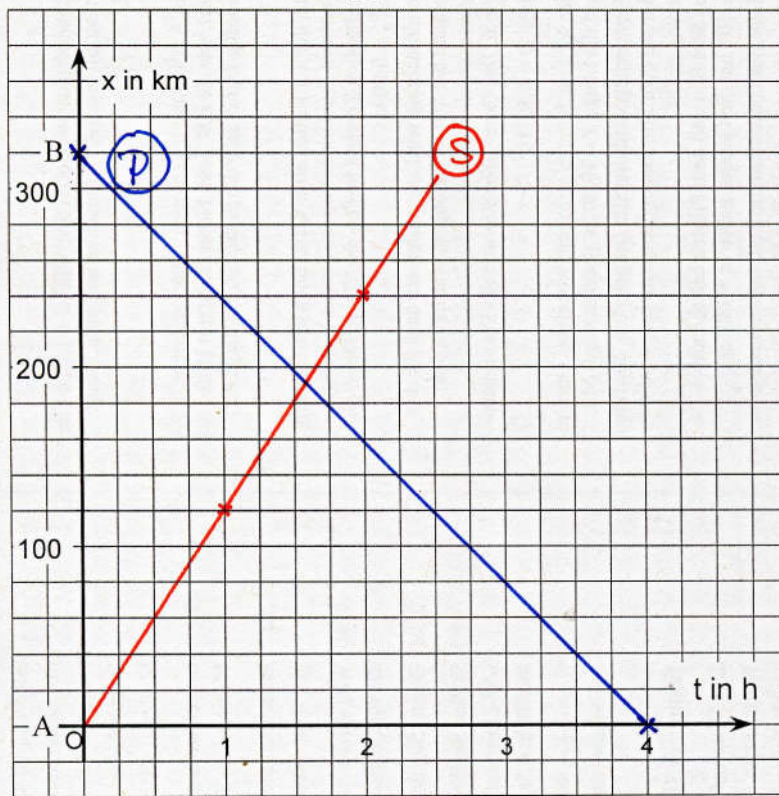


Aufgabenmix.1 : Aufgabe 1

$$1.1 \quad v_p = \frac{\Delta x}{\Delta t} = \frac{-320 \text{ km}}{4,00 \text{ h}} = -80,0 \frac{\text{km}}{\text{h}}$$

$$x_p(t) = -80,0 \text{ km} \cdot \text{h}^{-1} \cdot t + 320 \text{ km}$$

$$x_s(t) = 120 \text{ km} \cdot \text{h}^{-1} \cdot t$$



$$1.2 \quad x_s(t) = v_s \cdot t ; \quad x_p(t) = v_p \cdot t + x_0$$

$$x_s(t) = x_p(t) \Rightarrow v_s \cdot t = v_p \cdot t + x_0 \Leftrightarrow (v_s - v_p) \cdot t = x_0$$

$$t = \frac{x_0}{v_s - v_p} = \frac{320 \text{ km}}{120 \text{ kmh}^{-1} - (-80 \text{ kmh}^{-1})} \Rightarrow \underline{t = 1,60 \text{ h}}$$

$$\Delta x_p = |v_p| \cdot t = 80 \text{ kmh}^{-1} \cdot 1,60 \text{ h} \Rightarrow \underline{\Delta x_p = 128 \text{ km}}$$

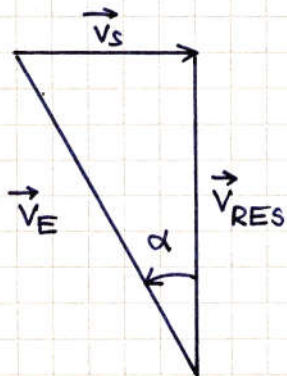
$$1.3 \quad x_2(t) = -120 \text{ kmh}^{-1} \cdot \left(t - \frac{10,0}{60} \text{ h}\right) + 320 \text{ km}$$
$$= -120 \text{ kmh}^{-1} \cdot t + 120 \cdot \frac{10,0}{60} \text{ km} + 320 \text{ km}$$

$$x_2(t) = -120 \text{ kmh}^{-1} \cdot t + 340 \text{ km}$$

Aufgabenmix 1 : Aufgabe 2

2.0 Geg: $v_s = 0,15 \text{ m s}^{-1}$; $v_E = 0,45 \text{ m s}^{-1}$; $b = 90 \text{ m}$

2.1



$$v_E^2 + v_s^2 = v_{RES}^2 \Leftrightarrow v_{RES} = \sqrt{v_E^2 - v_s^2}$$

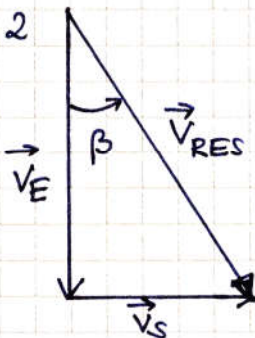
$$t_1 = \frac{b}{v_{RES}} = \frac{b}{\sqrt{v_E^2 - v_s^2}}$$

$$t_1 = \frac{90 \text{ m}}{\sqrt{(0,45 \text{ m s}^{-1})^2 - (0,15 \text{ m s}^{-1})^2}} = 212 \text{ s} \\ = \underline{\underline{3 \text{ min } 32 \text{ s}}}$$

$$\sin(\alpha) = \frac{v_s}{v_E} \Rightarrow \alpha = \sin^{-1}\left(\frac{v_s}{v_E}\right)$$

$$\alpha = \sin^{-1}\left(\frac{0,15 \text{ m s}^{-1}}{0,45 \text{ m s}^{-1}}\right) \Rightarrow \alpha = \underline{\underline{19,5^\circ}}$$

2.2



$$\tan(\beta) = \frac{v_s}{v_E} = \frac{x_{AB}}{b} \Leftrightarrow x_{AB} = b \cdot \frac{v_s}{v_E}$$

$$x_{AB} = 90 \text{ m} \cdot \frac{0,15 \text{ m s}^{-1}}{0,45 \text{ m s}^{-1}} \Rightarrow \underline{\underline{x_{AB} = 30 \text{ m}}}$$

$$\text{(Oder: } x_{AB} = v_s \cdot t_{\text{ü}} \text{ ; } t_{\text{ü}} = \frac{b}{v_E} \Rightarrow x_{AB} = b \cdot \frac{v_s}{v_E} \dots)$$

2.3 Positive Richtung stromabwärts \Rightarrow neg. Richtung aufw.,
also Start in die negative Richtung

