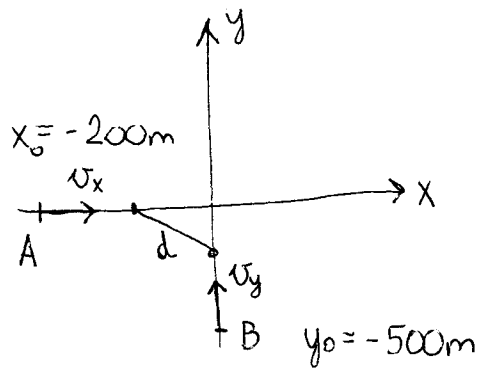


2.)



$$x_0 = -0,2 \text{ km}$$

$$u_x = 60 \text{ km/h}$$

$$y_0 = -0,5 \text{ km}$$

$$u_y = 40 \text{ km/h}$$

$$t(d_{\min}) = ?$$

$$d_{\min} = ?$$

$$x = ? \quad y = ?$$

$$x = x_0 + u_x t$$

$$d_{AB} = \sqrt{(x_A - x_B)^2 + (y_A - y_B)^2} \quad (2D)$$

(i)

$$\left. \begin{aligned} x &= x_0 + u_x t = -0,2 + 60t \\ y &= y_0 + u_y t = -0,5 + 40t \end{aligned} \right\}$$

$$d^2 = x^2 + y^2$$

$$d^2 = (-0,2 + 60t)^2 + (-0,5 + 40t)^2$$

$$d^2 = 5200t^2 - 64t + 0,29$$

Minimum ha derivált zero

$$\frac{d(d^2)}{dt} = 10400t - 64 = 0$$

$$t = 0,00615 \text{ h} = \underline{22,15 \text{ s}}$$

(ii)

$$d_{\min} = (5200 \cdot 0,00615^2 - 64 \cdot 0,00615 + 0,29)^{1/2} = 0,305 \text{ km} = \underline{305 \text{ m}}$$

(iii)

$$x = -0,2 + 60 \cdot 0,00615 = 0,169 \text{ km} = \underline{169 \text{ m}}$$

$$y = -0,5 + 40 \cdot 0,00615 = -0,254 \text{ km} = \underline{-254 \text{ m}}$$