

4)

b) KESKINOPUS ON

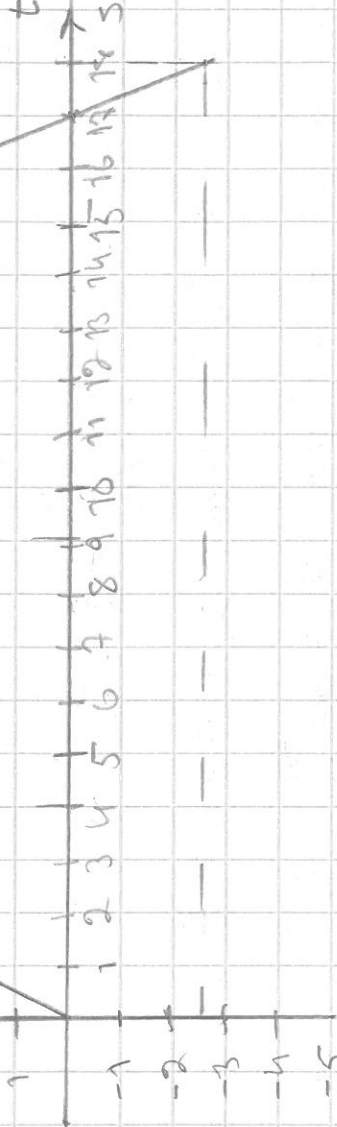
$$v_k = \frac{\Delta x}{\Delta t} = \frac{7,0 \text{ m}}{5,0 \text{ s}} = 1,4 \frac{\text{m}}{\text{s}}$$

c.) KUNNASSA =

$$\text{KUN } t = 18 \text{ s, MIN } x = -25 \text{ m}$$

$$\Delta t = t_2 - t_1 = 9,0 \text{ s} - 4,0 \text{ s} = 5,0 \text{ s}$$

$$\Delta x = x_2 - x_1 = 15 \text{ m} - 8,0 \text{ m} = 7,0 \text{ m}$$



5) a)

$$v_1 = 64 \text{ km/h} = \frac{64}{3,6} \text{ m/s} = 17,77 \frac{\text{m}}{\text{s}} \text{ (ALKUNOPUS)}$$

$$v_2 = 0 \frac{\text{m}}{\text{s}} \text{ (LOPPUNOPUS)}$$

$$\Delta v = v_2 - v_1 = 0 \frac{\text{m}}{\text{s}} - 17,77 \frac{\text{m}}{\text{s}} = -17,77 \frac{\text{m}}{\text{s}}$$

$$\Delta t = 0,06 \text{ s}$$

KESKIKIIHTYVYS ON

$$a_k = \frac{\Delta v}{\Delta t} = \frac{-17,77 \frac{\text{m}}{\text{s}}}{0,06 \text{ s}} = -296,29 \frac{\text{m}}{\text{s}^2} \approx -300 \frac{\text{m}}{\text{s}^2}$$

V: KIIHTYVYS ON $-300 \frac{\text{m}}{\text{s}^2}$ (EI ANDASTUVUS $300 \frac{\text{m}}{\text{s}^2}$)

$$\text{KOSKA } \frac{296,29 \frac{\text{m}}{\text{s}^2}}{9,81 \frac{\text{m}}{\text{s}^2}} \approx 30,2 \dots \text{MIN KIIHTYVYS ON}$$

YLI 30-KERTAINEN AUTOMISKIIHTYVYTTEN VAPDEN.