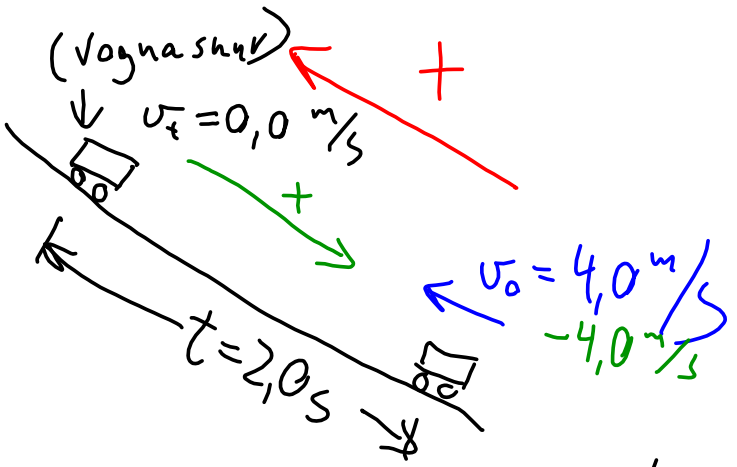
1.21 (vognas hast)



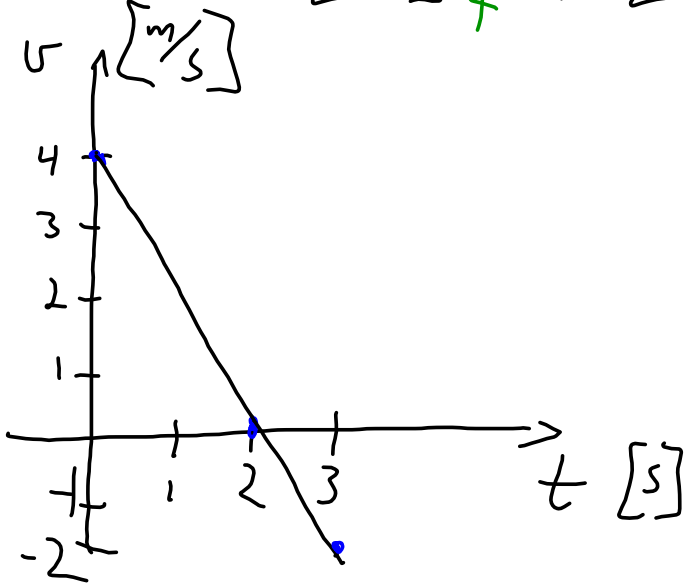
a) Farten $v_t = 0{,}0\ m/s$ da vogna stanser

b) $$a = \frac{\Delta v}{\Delta t} = \frac{v_t - v_0}{2{,}0\,[s]} = \frac{0{,}0\,[m/s] - 4{,}0\,[m/s]}{2{,}0\,[s]}$$

$$a = \frac{-4{,}0}{2}\left[\frac{m/s}{s}\right] = -2{,}0\,[m/s^2]$$

c) $$v = v_0 + a \cdot t = 4{,}0\,[m/s] + (-2{,}0) \cdot 3{,}0\,[\tfrac{m}{s^2} \cdot s]$$

$$= 4{,}0\,[m/s] - 6{,}0\,[m/s] = -2{,}0\,[m/s]$$



1.24

a) $v = v_0 + at = 0{,}0\,[m/s] + 4{,}00\,[m/s^2] \cdot 2{,}50\,[s]$

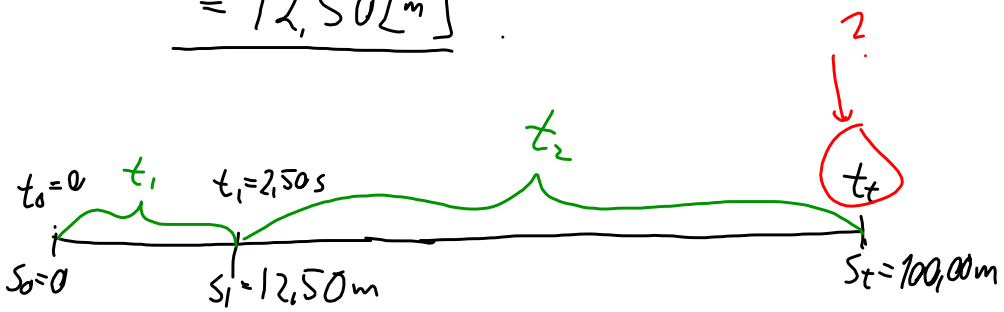
$4{,}00\ m/s^2$ $2{,}50\ s$

$= 10{,}00\,[\frac{m}{s^2} \cdot s] = \underline{10{,}00\,[m/s]}$

b) $s_1 = v_0 \cdot t + \frac{1}{2} a \cdot t^2 = \frac{1}{2} \cdot 4{,}00\,[\frac{m}{s^2}] \cdot 2{,}50^2\,[s^2]$

$v_0 = 0{,}0$

$= \underline{12{,}50\,[m]}$



$t_t = t_1 + t_2$

$t_2 = \frac{\Delta s}{v} = \frac{(100{,}00 - 12{,}50)\,[m]}{10{,}00\,[m/s]} = 8{,}75\,[s]$

$t_t = 2{,}50\,[s] + 8{,}75\,[s] = 11{,}25\,[s]$

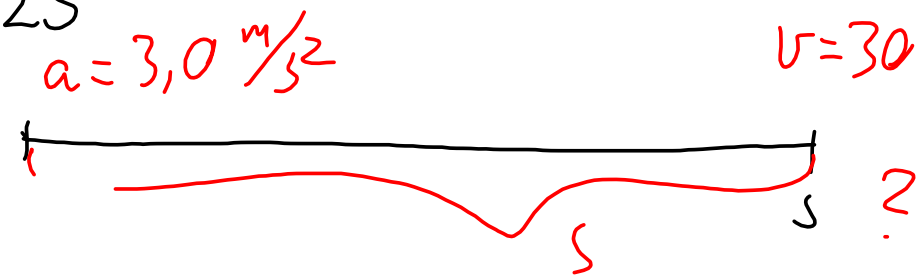
d) Antar: $t_r = 9{,}60\ s$

$t_1 = 2{,}50\ s \quad s_1 = 12{,}5\ m$

$t_2 = t_r - t_1 = 9{,}60\,[s] - 2{,}50\,[s] = 7{,}10\,[s]$

$v_x = \frac{s}{t_2} = \frac{87{,}50\ m}{7{,}10\ s} = 12{,}3\ m/s$

1.25

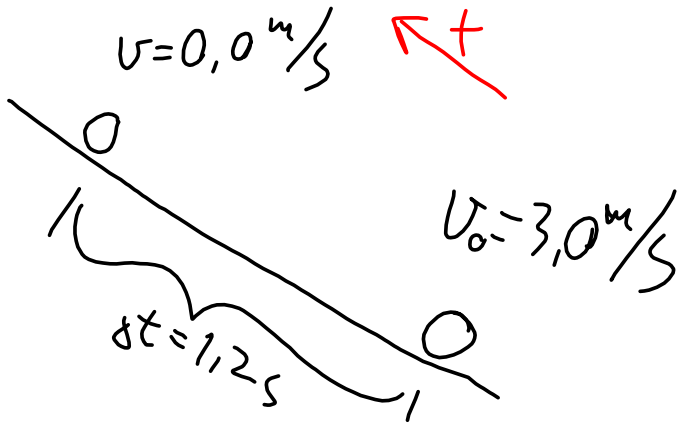


$$v^2 - v_0^2 = 2as$$

$v_0 = 0$

$$s = \frac{v^2 - v_0^2}{2a} = \frac{30^2 \left[\frac{m^2}{s^2}\right]}{2 \cdot 3{,}0 \left[\frac{m}{s^2}\right]} = 150 \,[m]$$

1.26



a) $v = v_0 + at$

0

$v_0 = -at$

$a = -\frac{v_0}{t} = -\frac{3{,}0\,[m/s]}{1{,}2\,[s]} = -2{,}5\,[m/s^2]$

b) $s = v_0 t + \frac{1}{2}at^2 = 3{,}0 \cdot 1{,}2\,[m/s \cdot s] + \frac{1}{2}(-2{,}5) \cdot 1{,}2^2\,[\frac{m}{s^2} \cdot s^2]$

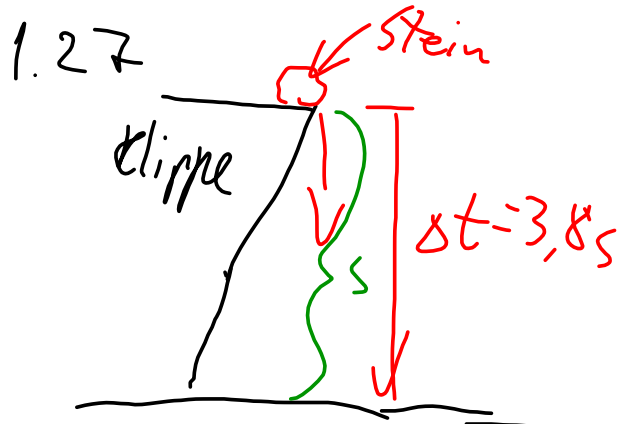
$= 3{,}6\,[m] - 1{,}8\,[m] = 1{,}8\,[m]$

c) $s_1 = v_0 t + \frac{1}{2}at^2 = 3{,}0 \cdot 0{,}40 + \left(-\frac{2{,}5}{2}\right) \cdot 0{,}40^2 = 1{,}0\,[m]$

$s_2 = v_0 t + \frac{1}{2}at^2 = 3{,}0 \cdot 2{,}40 + \left(-\frac{2{,}5}{2}\right) \cdot 2{,}40^2 = 0{,}0\,[m]$

Fritt fall . $a = g = 9{,}81\ m/s^2$

1.27



$$s = v_0 \cdot t + \frac{1}{2} a t^2 = \frac{1}{2} \cdot 9{,}81 \cdot 3{,}8^2 \left[\frac{m}{s^2} \cdot s^2\right]$$

$v_0 = 0$, $g = 9{,}81$

$$= 70{,}8\ [m]$$