ZINEMATIKAKO ARIKETAK

① $x_0 = 200\,m$

a) $y_f = 0\,m$ $y = y_0 + \cancel{v_0}t - \frac{1}{2}gt^2$

   $v_0 = 0$ $0 = 200 - 4'9t^2$

   $$\sqrt{\frac{-200}{-4'9}} = t$$

   $t = 6'4\,s$

b) $v = \cancel{v_0} - gt$

   $v = -9'8 \cdot 6'4 = 62,6\,m/s$

   $\quad \rightarrow$ Norantzkoa adierazten du. Beherantza.

② $v_{0_1} = 25\,m/s$ Biak dira goranzko puntiketa $\rightarrow \underline{\underline{v > 0}}$

$y_{0_1} = 20\,m$ $y = y_0 + v_0 t - \frac{1}{2}gt^2$

$v_{0_2} = 30\,m/s$ $y_1 = 20 + 25t - 4'9t^2$

$y_{0_2} = 0\,m$ $y_2 = 0 + 30t - 4'9t^2$

a) $y_1 = y_2$

   $20 + 25t - 4'9\cancel{t^2} = 30t - 4'9\cancel{t^2}$

   $20 = 5t$

   $t = 4s$

   $y = 30 \cdot (4) - 4'9(4)^2 = 41'6\,m\,//$

b) $v_{y_1} = \cancel{v_{0_1}} - gt = 25 - 9'8 \cdot 4 = -14'2\,m/s$

   $v_{y_2} = v_{0_2} - gt = 30 - 9'8 \cdot 4 = -9'2\,m/s$

③

$v = 54 \, km/h \longrightarrow 15 \, m/s$ $vf = vo + at$

Automobila

a) $v = 15 + 4'5 \, \boxed{t}$

$a = 4'5 \, m/s^2$

$x = 250 \, m$ t ez dakigu becaz, beste ekuaziodik ateraco dugu

$vf = ?$

$$x = xo + vot + \frac{1}{2}at^2$$

$$250 = 0 + 15t + \frac{1}{2} \cdot 4'5 \cdot t^2$$

$$t = 7'7 \, s$$

$$v = 4 \cdot 9'7 \, m/s //$$

④ $v_1 = 45'2 \, km/h \Rightarrow 12,1 \, m/s$

a) $x = xo + vot$

$x = 0 + 12,1 t$

$vo = 0 \, m/s$

$a = -1'5 \, m/s^2$

$$x_2 = xo + vot + \frac{1}{2}at^2$$

$x = 1000 \, m$

$$x_2 = 1000 + \frac{1}{2}(-1'5)t^2$$

$$x_2 = 1000 - 0,75t^2$$

$$12,1 t = 1000 - 0,75t^2$$

$$t = \frac{-12'1 \pm \sqrt{3346,41}}{1,5} = \frac{-12'1 \pm 56,1}{1,5} < \begin{array}{l} 29,3 s \\ \cancel{x} \end{array}$$

$$x = 12,1 \cdot 29,3 = 354 \, m //$$

b) $v = vo + at$

$v = -1'5 \cdot t = -1'5 \cdot 29'3 = -44 \, m/s$

⑤

$vo > 0 \sim 96 \, m/s$ $x = xo + vt$ ① $0 + 6t + \frac{1}{2}gt^2$

$t - 1 \longrightarrow 4 \, m/s$ ② $0 + (4) \cdot (t - 1) + \frac{1}{2}g(t-1)^2$

elkartu?

$6t + 4'9t^2 \quad 4(t-1) + 4'9(t^2 - 2t + 1)$

$4'9t^2 + 6t = 4t - 4 + 4'9t^2 - 9'8t + 4'9$

$2t = -4 \quad 11'8t = 0'9$

$x = 0,48 m //$ $t = \quad\quad t = 0,08 \, s$

⑥

$y_0 = 25m$

$y = 0$

$v = ?$

$t = ?$

jausi = eron

$\underline{\underline{v_0 = 0}}$!

$y = y_0 + \cancel{v_0}t - \frac{1}{2}gt^2$

$0 = 25 - \frac{1}{2} \cdot 9'8 \cdot t^2$

$-25 = - 4'9 t^2$

$t = 2,25s$

$v = -gt = -9'8 \cdot 2,25 = 22,14 \, m/s.$

⑦

$v_0 = 0$

$t - 1 \, bigarrena$

① $y = y_0 + \cancel{v_0}t - \frac{1}{2}gt^2$

$y_1 = 0 - 4'9t^2$

② $y = -4'9(t-1)^2$

$y = -4'9(t^2 - 2t + 1)$

$y_2 = -4'9t^2 + 9'8t \mp 4'9$

$t = 2s$

$y_1 = -4'9 \cdot 2^2 = -19'6m$

$y_2 = -4'9 \cdot 2^2 + 9'8 \cdot 2 - 4'9 = -4'9 \, m$

BATA BESTETIK $19'6 - 4'9 = 14'7 \, m$-ra.

⑧

$y_0 = 1200m$

$v_0 = 0,5m/s$

$v_0 \mathcal{L}0$!!

$v = -v_0 - gt$

$y = y_0 + v_0t - \frac{1}{2}gt^2$

$0 = 1200 - 0'5t - 4'9t^2$

$t = 15'6s$

$v = -0'5 - 9'8 \cdot 15'6 = -153'4 \, m/s$ //

⑨

$y_0 = 15m$

$y_0 = 0m$

$y = y_0 + v_0t - \frac{1}{2}9'8t^2$

$15 = 0 + v_0t - 4'9t^2$

$15 = 9'8t^2 - 4'9t^2$

$t = 1'75 \, /)$

$v = v_0 - gt$

$0 = v_0 - 9'8t$

$v_0 = 9'8t$

$v = 17'18 \, m/s$ //

(10)

$y_0 = 0m$

$v = 5m/s$

$y = 9 m$.

a) $y = y_0 + v_0 t - \frac{1}{2}g t^2$

$9 = 0 + v_0 t - 4'9 t^2$.

$v = v_0 - g t$

$5 = v_0 - 9'8 t$

$v_0 = 5 + 9'8 t$

Ordezkatuz,

$9 = 0 + 5t + 9'8 t^2 - 4'9 t^2$

$9 = 5t + 4'9 t^2$

$t = 0,94 s$.

$v_0 = 5 + 9'8 \cdot (0'94) = 14'2 m/s$

b) $y_{max} \rightarrow v = 0!!$

$0 = v_0 - 9'8 t$

$0 = 14'2 - 9'8 \cdot 0,94 t$

$t = \frac{14'2}{9'8} = 1,45 s$

$y = 14'2 t - 4'9 t^2 = 11 m \;||$

c) $t = 0'94 s \;||$