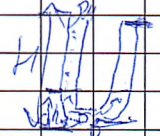




(V4)

Дано:
 $h = 45 \text{ см}$
 $U = 150 \text{ м/с}$
 $\rho = \frac{m}{V}$



Решение:

Длина трубки — 2 свободных конца
 в 9 сосуда, при этом $\rho_1 = \rho_2$

$$D = \frac{m}{V} \quad V = \frac{m}{\rho} \quad V = SH$$

(V2)

Дано:

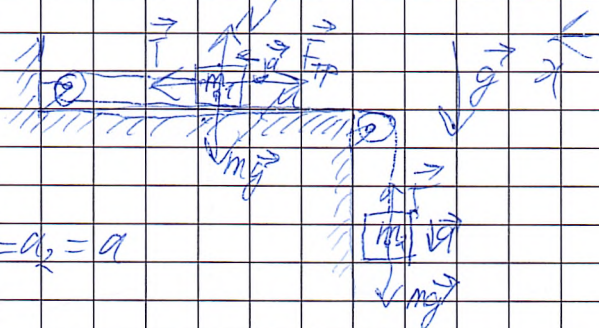
$$g = 10 \frac{\text{м}}{\text{с}^2}$$

m_1

m_2

μ

$a_1, 2 = ?$



$$a_1 = a_2 = a$$

$$\vec{N}_1 + m_2 \vec{g} + \vec{T} + \vec{F}_{тр} = m_1 \vec{a} \quad N = m_1 g \quad (1)$$

$$m_2 \vec{g} + \vec{T} = m_2 \vec{a} \quad F_{тр} = \mu N \quad (2)$$

$$\text{Ox}_1: T - F_{тр} = m_1 a \quad (3) \quad (1) \rightarrow (2) \rightarrow (3)$$

$$T - \mu m_1 g = m_1 a \quad (6)$$

$$\text{Oy}: m_2 g - T = m_2 a \quad (4) \quad (4) \Rightarrow T = m_2 g - m_2 a \quad (5)$$

(5) → (6)

$$m_2 g - m_2 a - \mu m_1 g - m_1 a = 0$$

$$g(m_2 - \mu m_1) - a(m_2 + m_1) = 0 \quad (8)$$

$$g(m_2 - \mu m_1) = a(m_2 + m_1) \quad (9)$$

$$a = \frac{g(m_2 - \mu m_1)}{m_2 + m_1}$$

Ответ: $a = \frac{g(m_2 - \mu m_1)}{m_2 + m_1}$

(V3)

Дано:

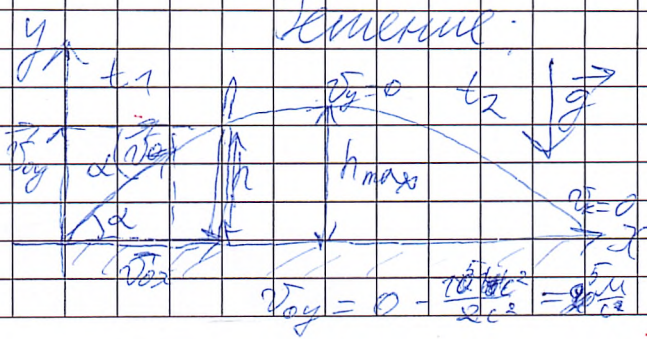
$$g = 10 \frac{\text{м}}{\text{с}^2}$$

$$t_1 = 2 \text{ с}$$

$$t_2 = 3 \text{ с}$$

$$v_k = 0 = v_{1x} + v_{2y}$$

Решение:



$$h = v_0^2 \sin^2 \alpha$$

$$h_{\text{max}} = \frac{v_0^2 \sin^2 \alpha}{2g}$$

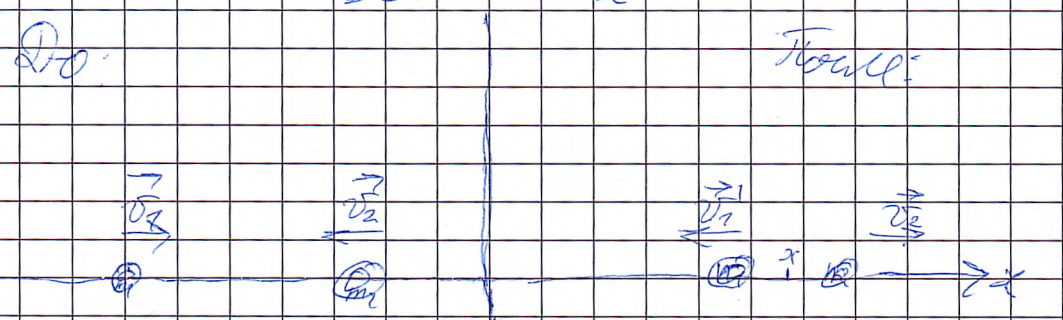
$$v_{0y} = v_0 \sin \alpha$$

$v_x = v_x + \frac{g^2}{2} t^2 = \frac{90}{10} t$ $v_{0x} = v_x \frac{(g^2 t^2)}{2}$
 $v_y = \sqrt{v_{0x}^2 + v_{0y}^2} = \sqrt{100 + 25} = 11,50 \frac{m}{s}$
 $r = \frac{80,76 \frac{m}{s} \cdot t}{10 \frac{m}{s^2}} = \frac{8,076 t}{1} = 8,076 t \text{ m}$ $v_0 = \sqrt{v_x^2 + v_y^2} = \sqrt{90^2 + 25^2} = 93,5 \frac{m}{s}$
 Ambem: $t = 5,62 \text{ s}$ $h = 20,62 \frac{m}{s} \cdot 5,62 \text{ s} = 115,6 \text{ m}$

(23)

Dano:
 $m_1 = m_2 = m$
 $L = 700 \text{ cm}$
 $v_0 = 0$
 $v_1 = 30 \frac{cm}{s}$
 $v_2 = 70 \frac{cm}{s}$

Решение

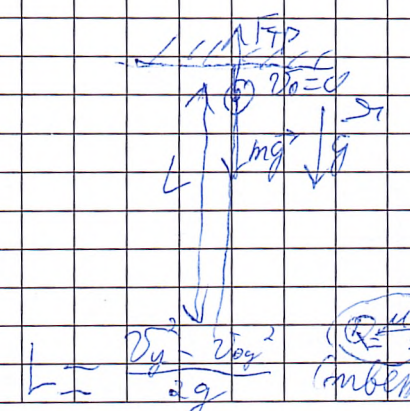


а) $v_1' = v_2' = ?$
 б) $\Delta x_{12} = ?$
 $m v_1 + m v_2 = m v_1' + m v_2'$ Скорости равны
 $m v_1 - m v_2 = m v_2' - m v_1'$ те массы
 $t_1 = \frac{L}{v_1} (1) \quad t_2 = \frac{L}{v_2} (2) \quad m(v_1 - v_2) = m(v_2' - v_1')$ Знакомы
 $(1), (2) \rightarrow (3) \quad v_1 - v_2 = v_2' - v_1'$ $v_2' = v_1 = 30 \frac{cm}{s} \quad v_1' = 70 \frac{cm}{s}$
 $\Delta x_{12} = x_1 - x_2$
 $\Delta x_{12} = v_1 t_1 - v_2 t_2 - v_0 t_2 + v_0 t_1$
 $x_1 = x_0 + v_1 t_1$
 $x_2 = x_0 + v_2 t_2$
 $v_1 t_2 = v_2 t_1$

(25)

Dano:
 m
 $v_0 = 0$
 $g = 20 \frac{m}{s^2}$
 L
 k, μ
 $Q = ?$

Решение



$Q = A_{TP}$
 $A_{TP} = F_{TP} \cdot k \cdot L \cdot \sin 90^\circ \quad \mu = k$
 $A_{TP} = F_{TP} \cdot k \cdot L \quad N = mg$
 $Q = F_{TP} k L \quad F_{TP} = kN$
 $Q = \frac{mg \cdot k \cdot L}{g} \quad Q = \frac{mg \cdot k \cdot L}{g}$