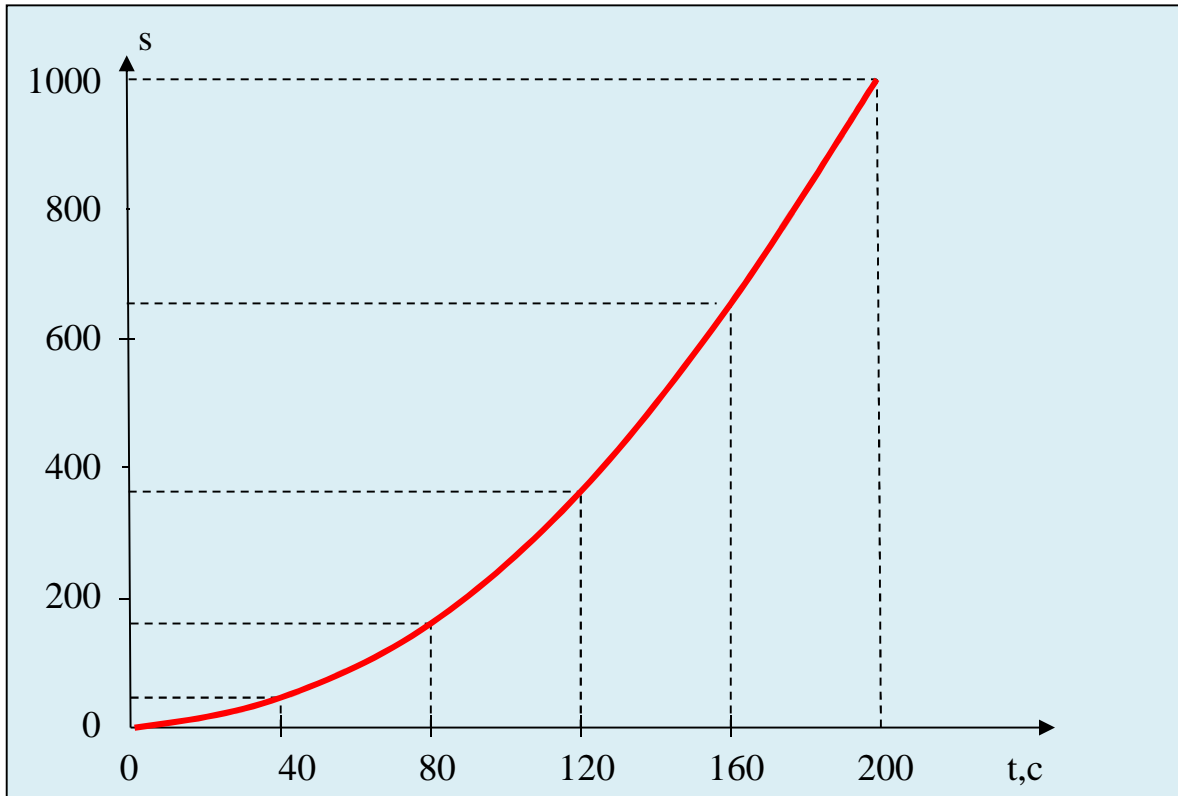


1.

S

$$\frac{a_1 t^2}{2} - \frac{a_2 t^2}{2} = s; t^2(a_1 - a_2) = 2s; t = \sqrt{\frac{2s}{a_1 - a_2}} = 200 \text{ c.}$$

$$s_1 = \frac{a_1 t^2}{2} = \frac{0,05 \cdot 40000}{2} = 1000 \text{ м}; s_2 = 800 \text{ м}$$



t, c	40	80	120	160
s,	40	160	360	640

2.

$$v_x = v \cos(\alpha + \beta)$$

$$v_y = v \sin(\alpha + \beta)$$

$$g_x = g \sin \alpha; g_y = -g \cos \alpha.$$

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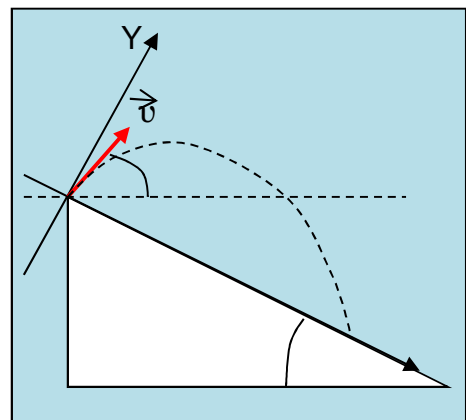
$$: x_1 = v \cos(\alpha + \beta)t + \frac{g \sin \alpha t^2}{2};$$

$$\text{OY: } y = v \sin(\alpha + \beta)t - \frac{g \cos \alpha t^2}{2};$$

$$x_2 = \frac{g \sin \alpha t^2}{2}; x_1 = x_2; y=0$$

vt

$$v = \frac{g \cos \alpha t^2}{2 \sin(\alpha + \beta)}; \text{ Подставим с первое:}$$



$$\frac{g \cos \alpha t^2 \cos(\alpha + \beta)}{2 \sin(\alpha + \beta)} + \frac{g \sin \alpha \cdot t^2}{2} = \frac{g(\sin \alpha - \mu \cos \alpha) t^2}{2}$$

$$\cos \alpha \operatorname{ctg}(\alpha + \beta) + \sin \alpha = \sin \alpha - \mu \cos \alpha; \mu = -\operatorname{ctg}(\alpha + \beta); \mu = 0,176$$

: 0,176

3.

$$: Ma = T - N$$

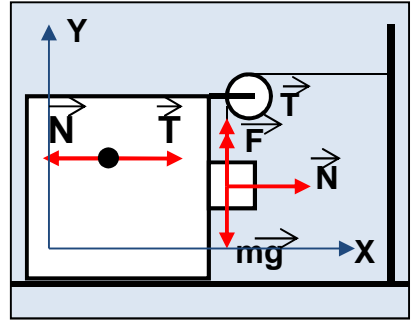
$$ma = N$$

OY: $ma = mg - T - \mu N$

$$a(M + 2m) = mg - \mu ma$$

$$a(M + 2m + \mu m) = mg; a = \frac{mg}{M + 2m + \mu m};$$

$$a = \frac{g}{\frac{M}{m} + 2 + \mu}.$$



$\sqrt{2}$

$$: a_1 = \frac{g}{\frac{M}{m} + 2 + \mu}; a_2 = \frac{g\sqrt{2}}{\frac{M}{m} + 2 + \mu}.$$

4. $R = \frac{R_1 \cdot R_2}{R_1 + R_2}; R = \frac{\frac{\rho(1-x)}{S} \cdot \frac{\rho x}{S}}{\frac{\rho(1-x)}{S} + \frac{\rho x}{S}} = \frac{\rho(1-x)x}{S} = \frac{4(1-x)x}{\pi d^2 l};$

$$\pi d^2 R = 4\rho - 4\rho x^2; x^2 - x + \frac{\pi d^2 R}{4\rho} = 0; x^2 - x + \frac{3,1 \cdot 10^{-8} \cdot 0,2}{4 \cdot 1,7 \cdot 10^{-8}} = 0;$$

$$x^2 - x + 0,092 = 0; x = 0,11$$

: 11

5.

25-30 , ,

$$(k = F / x).$$