

№1.

Ф-10-14



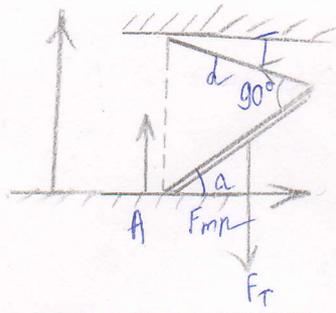
Радио:
m -
H -
A -

Решение: $A = mgh, \frac{mv^2}{2}, \Delta W = mgh$
 $\Delta W = A + A_{тр} / A = F \cdot \cos \beta = F \cdot s$
 $mgh = A + A_{тр}$
 $\frac{mv^2}{2} - 0 = A + A_{тр} + A_{тр}$
 $\frac{mv^2}{2} - mgh = A_{тр} \Rightarrow \frac{mv^2}{2} - mgh = mgh - A$

$v = \sqrt{2(2mgh - A) / m}$

Ответ: $v = \sqrt{2 \cdot (2mgh - A) / m}$

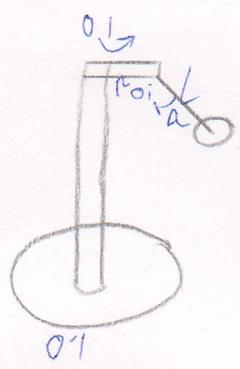
№2.



$N + F_{тр} + T + mg = 0$
 $T \cdot L \cdot mg \cdot \frac{L}{2} \cdot \cos \alpha = 0 \Rightarrow T = \frac{mg \cdot \cos \alpha}{2}$
 $N = mg - T \cos \alpha = mg \cdot (1 - \cos^2 \alpha)$
 $F_{тр} = \mu \cdot mg (1 - \cos^2 \alpha) = \frac{mg \cos \alpha \cdot \sin^2 \alpha}{2}$
 $\mu = \frac{\cos \alpha \cdot \sin^2 \alpha}{2 \cdot \cos \alpha} ; \mu(\alpha) = \frac{\sin^2 \alpha}{2}$

Ответ: $\mu = \frac{1}{3}$

№3.



Дано:
L = 0,5 м
m0 = 10 кг
Решение:
omega - ?

С: 0, т

Решение:
 $m_0 a = mg + T$
 $T = \frac{mg}{\cos \alpha}$
 $m_0 a = mg \tan \alpha$
 $a = \omega^2 R$
 $\omega^2 R = g \tan \alpha \Rightarrow \omega = \sqrt{\frac{g \tan \alpha}{R}}$
 $\omega = 4,6 \text{ с}^{-1}$
 Ответ: $\omega = 4,6 \text{ с}^{-1}$

№4.

$\alpha = \frac{\Delta v}{s} = \frac{2v}{5s}$

$s_2 s = mg \Rightarrow \frac{5vR T_2}{2v} s = mg$
 $\frac{3}{2} vR (T_1 - T_2) = mg \alpha$
 $\frac{3}{2} vR (T_1 - T_2) = \frac{5vR T_2}{2v} \cdot \frac{s}{5s}$

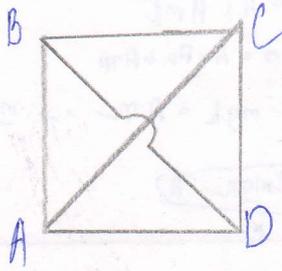
$2T_1 (T_1 - T_2) = 4T_2 \Rightarrow T_2 = \frac{21}{25} T_1$

$\frac{s_2}{s_1} = \frac{T_1 v_1}{T_2 v_2} = \frac{3}{5} \Rightarrow s_2 = \frac{3}{5}$

$s_1 \approx 60 \text{ км/ч}$

Ответ: $s_1 = 60 \text{ км/ч}; s_2 = \frac{3}{5}$

№5.



[Faint handwritten notes and mathematical derivations are visible throughout the page, including various algebraic expressions and geometric diagrams.]