

1) Дано:

$\alpha = 30^\circ$

$v_1 = 24 \text{ м/с}$

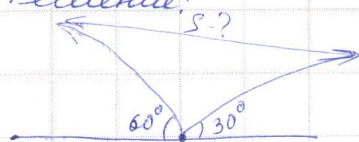
$\beta = 60^\circ$

$v_2 = 32 \text{ м/с}$

$t = 1,5 \text{ с}$

S - ?

Решение:



$$l_1 = \frac{2v_1 \sin \alpha}{g} = \frac{2 \cdot 24 \cdot \frac{1}{2}}{9,8} = \frac{24}{9,8}$$

$$l_2 = \frac{2v_2 \sin \beta}{g} = \frac{2 \cdot 32 \cdot \frac{\sqrt{3}}{2}}{9,8} = \frac{32\sqrt{3}}{9,8}$$

$x_1 = v_1 \cos \alpha t$

$x_2 = v_2 \cos \beta t$

$y_1 = v_1 \sin \alpha t - \frac{gt^2}{2}$

$y_2 = v_2 \sin \beta t - \frac{gt^2}{2}$

$$S = \sqrt{(x_1 + x_2)^2 + (y_2 - y_1)^2}$$

$$S = \sqrt{(v_1 \cos \alpha t + v_2 \cos \beta t)^2 + (v_2 \sin \beta t - v_1 \sin \alpha t)^2} =$$

$$= \sqrt{(t(v_1 \cos \alpha + v_2 \cos \beta))^2 + (t(v_2 \sin \beta - v_1 \sin \alpha))^2} =$$

$$= t \sqrt{(v_1 \cos \alpha + v_2 \cos \beta)^2 + (v_2 \sin \beta - v_1 \sin \alpha)^2} =$$

$$= t \sqrt{v_1^2 \cos^2 \alpha + 2v_1 v_2 \cos \alpha \cos \beta + v_2^2 \cos^2 \beta + v_1^2 \sin^2 \alpha - 2v_1 v_2 \sin \alpha \sin \beta +$$

$$+ v_2^2 \sin^2 \beta} = t \sqrt{v_1^2 + v_2^2 + 2v_1 v_2 \cos(\alpha + \beta)} = t \sqrt{v_1^2 + v_2^2} = 1,5 \sqrt{24^2 + 32^2} =$$

$$= 1,5 \sqrt{576 + 1024} = 1,5 \cdot 40 = 60 \text{ м}$$

2) Дано:

$T_3 = T$

$T_2 = \alpha T$

$T_1 = \alpha^2 T$

$\alpha \neq 1$

$A_{3-1} = 0,5 VR(T_1 - T_3)$

$$Q_{3-1} = \Delta V_{3-1} + A_{3-1} = 2VR(T_1 - T_3) = 2VR T(\alpha^2 - 1)$$

$\Delta V_{3-1} = 1,5 VR(T_1 - T_3)$

$$A = A_{3-1} + A_{2-3} = 0,5 VR(T_1 - T_2) + VR(T_3 - T_2) = 0,5 VR T(\alpha - 1)^2$$

$$\eta = \frac{A}{Q_{3-1}} = \frac{\alpha - 1}{4(\alpha + 1)} = 0,15 = 15\%$$

3) Дано:

$g_0 = 9,78 \text{ м/с}^2$

$g_n = 9,83 \text{ м/с}^2$

L - ?

Решение:

$\Delta g = g_n - g_0 = 9,83 - 9,78 = 0,55 \text{ м/с}^2$

$t = 24 \cdot 3600 = 86400 \text{ с}$

$$L = \frac{g t^2}{2} = \frac{0,55 \cdot 86400^2}{2} = 2052864000 \text{ м}$$

Ответ: 20 5286 4000 м

$$1. \text{JK} = 12 \text{ MIC}$$

$$2. \text{JK} : 4 \text{ есе артады}$$

$$3. \text{JK} : 5$$

$$4. \text{JK} \approx 1,5.$$