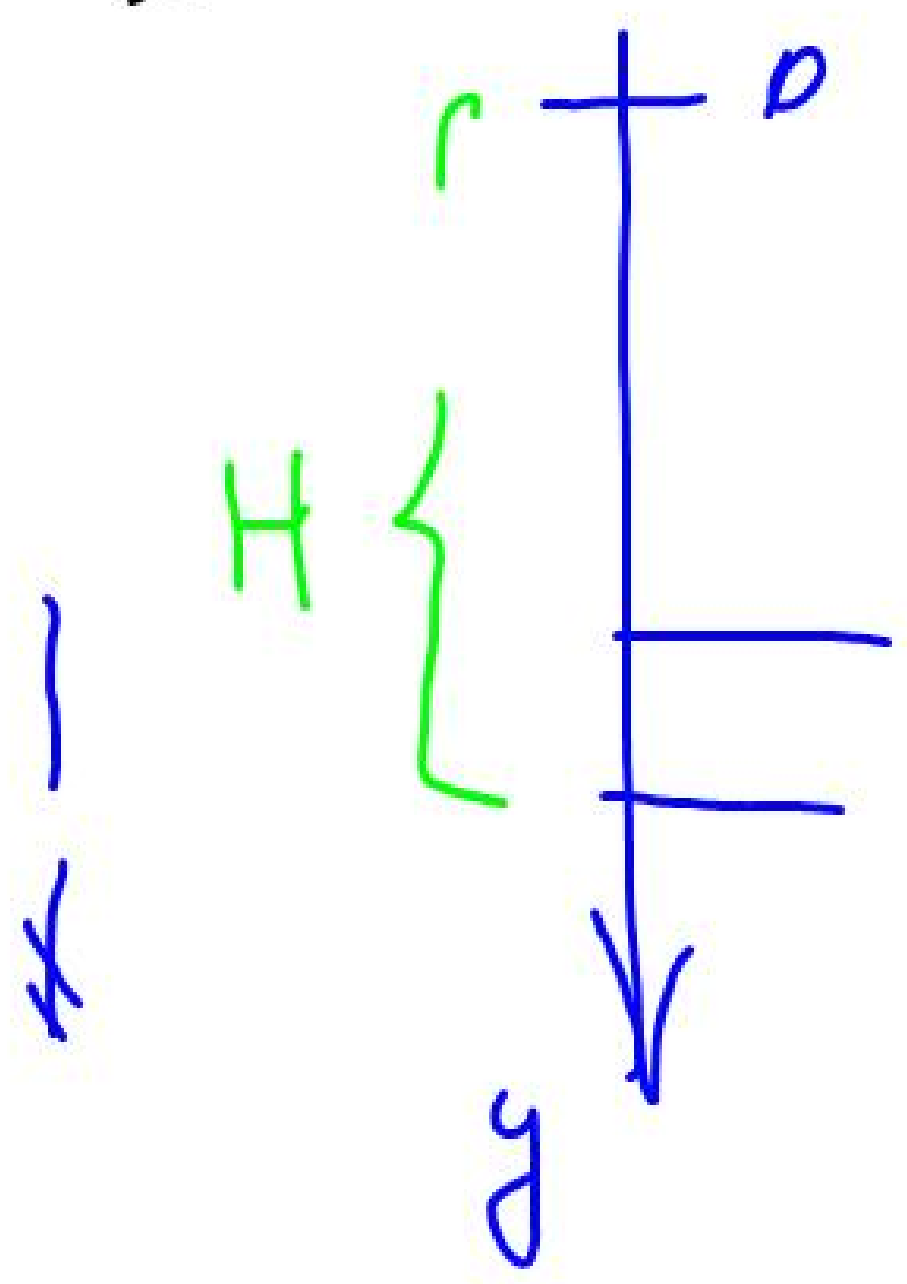


2

$v_0 = 0$

$$X(t) = v_0 + v_0 t + \frac{g t^2}{2} = \frac{g t^2}{2}$$



in $g = \frac{1}{50} \text{ c/s}^2$ | $X(t_k) = \frac{g t_k^2}{2} = H$

1) $H - 1 = X(t_k - 0,1) = \frac{g}{2} (t_k - 0,1)^2$

W-? $t_k - ?$

$$1 = \frac{g}{2} \left(t_k^2 - t_k + 0,2 t_k - 0,01 \right)$$

$$1 = 5 \cdot (0,2 t_k - 0,01)$$

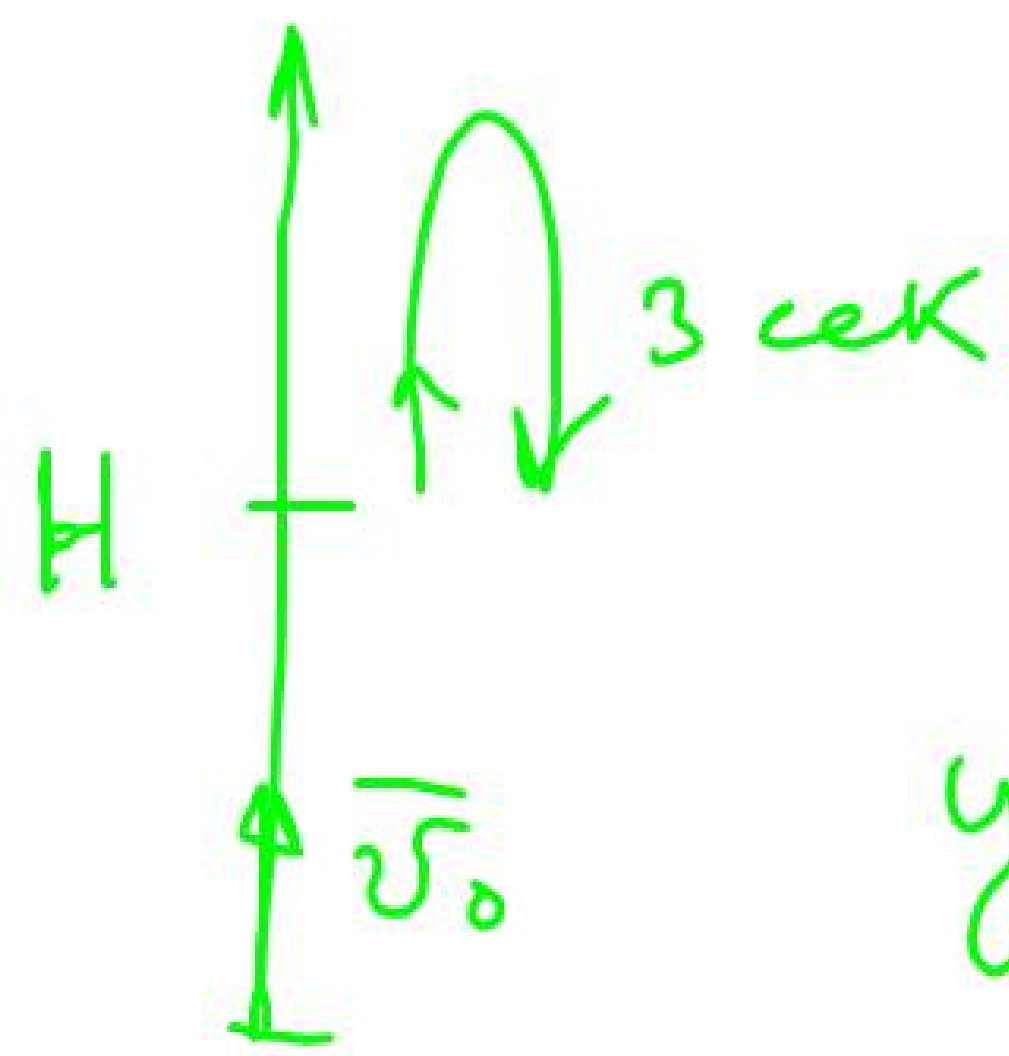
$$\leftarrow 1 t_k - 0,05$$

$$t_k = \cancel{0,95} 1,05$$

$$H = \frac{g}{2} t_k^2 = 5 \cdot 1,05^2 = \cancel{25} 5,51 \dots$$



3



$$y(t) = 0 + v_0 t - \frac{g t^2}{2}$$

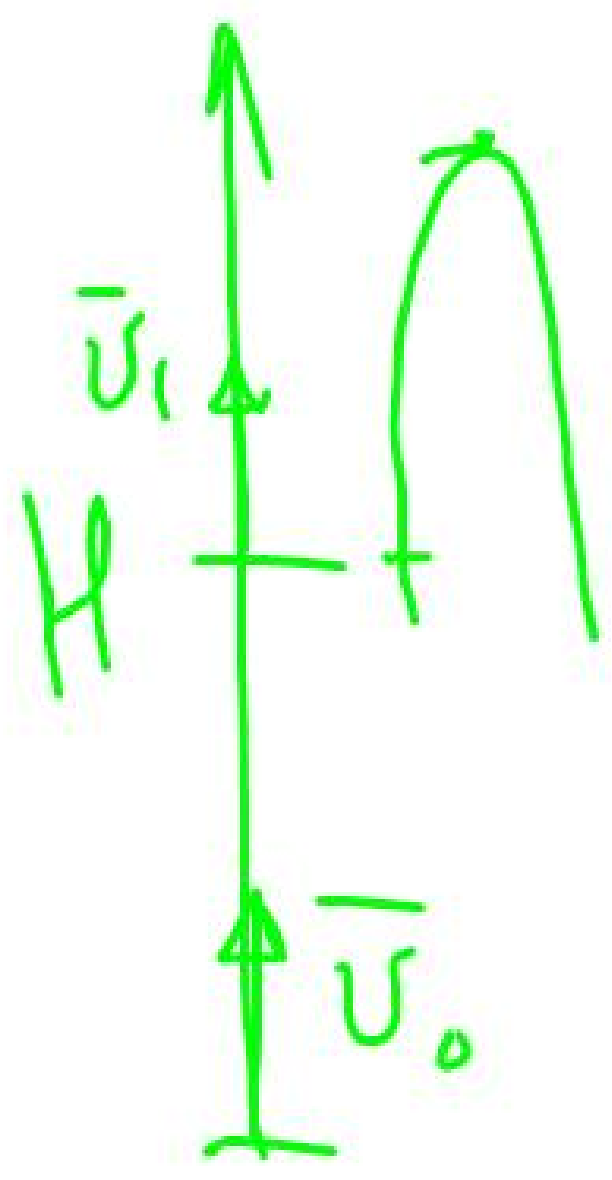
$$y(t_1) = H = v_0 t_1 - \frac{g t_1^2}{2}$$

$$y(t_2) = H = v_0 t_2 - \frac{g t_2^2}{2}$$

$$t_2 = t_1 + 3$$

$$v_0 t_1 - \frac{g t_1^2}{2} = v_0 (t_1 + 3) - \frac{g (t_1 + 3)^2}{2}$$

$$-v_0 \cdot 3 + g \cdot$$



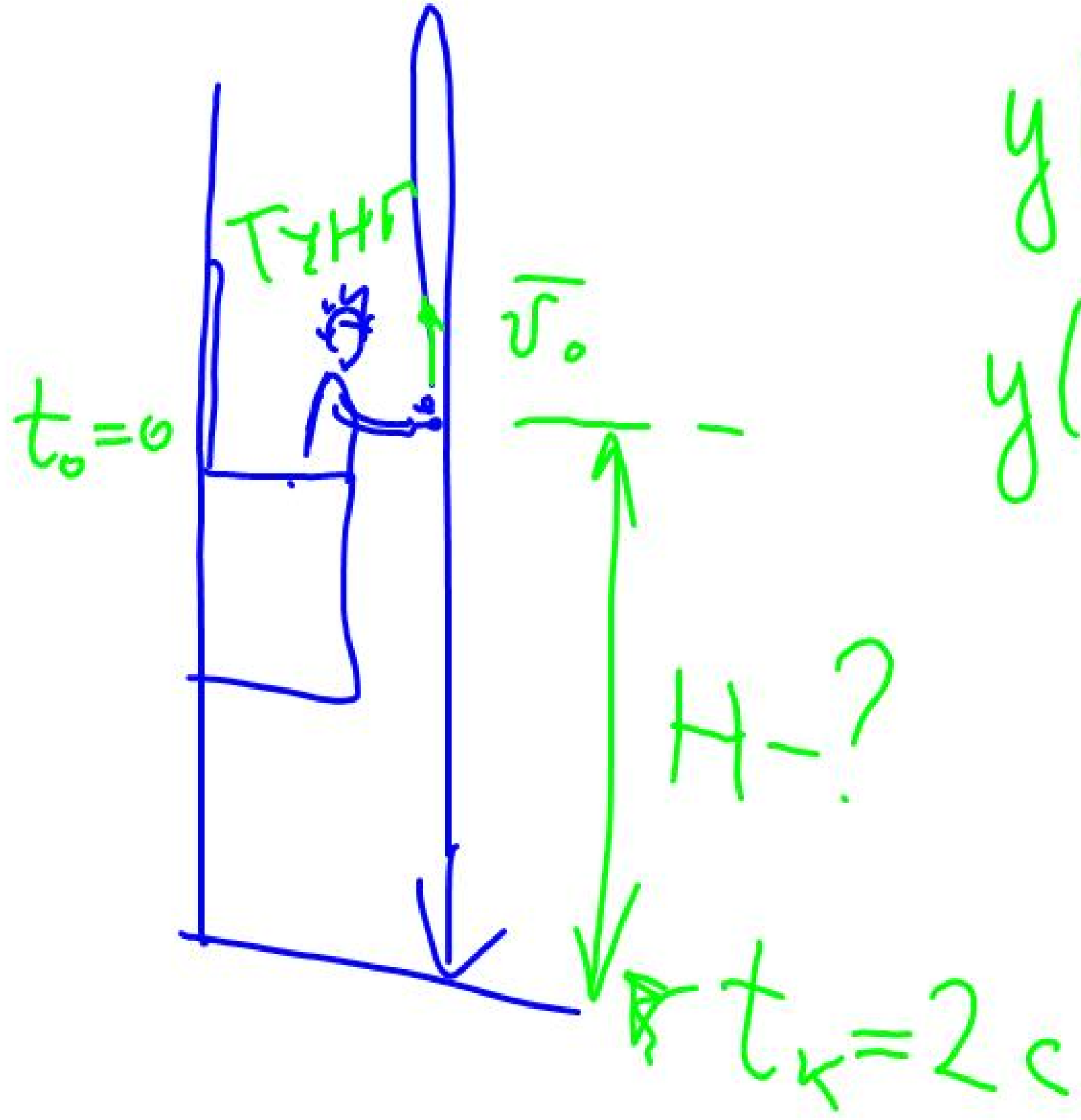
$$v_k = 0 = v_1 - g t = v_1 - g \frac{3}{2}$$

$$0 = v_1 - 15 \Rightarrow \underline{v_1 = 15 \frac{m}{s}}$$

~~$$v(t) = v_0 - g t$$~~

$$V_0^2 - V_1^2 = 2 \cdot g \cdot h$$

$$V_0 = \sqrt{2g \cdot h + V_1^2}$$
$$= \sqrt{2 \cdot 0,8,6 + 15^2} = 19,9$$



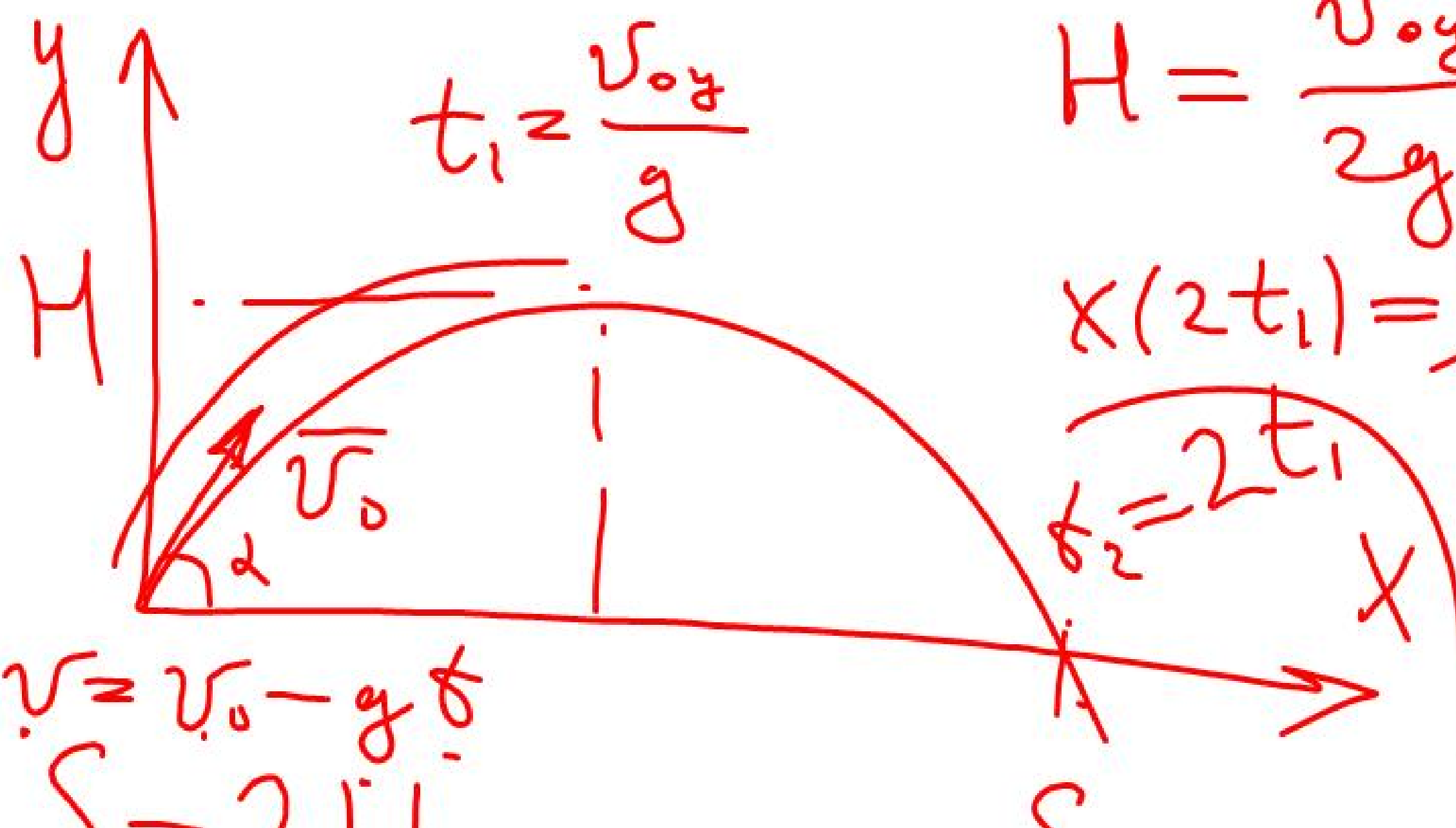
$$y(t) = H + v_0 t - \frac{g t^2}{2}$$
$$y(2) = 0 = H + 5 \cdot 2 - \frac{10}{2} 2^2$$

$$H = 20 - 10 = 10 \text{ m}$$



$$t_1 = \frac{v_{0y}}{g}$$

$$H = \frac{v_{0y}^2}{2g}$$



$$x(2t_1) = S = v_{0x} t$$

$$= v_{0x} \cdot 2t_1$$

$$= \frac{v_{0x} v_{0y}}{g}$$

$$v = v_0 - g t$$

$$S = 2H$$

$$\alpha = 30^\circ, v_0 = ?$$

$$2H = S$$

$$\frac{2v_{0y}^2}{2g} = 2 \frac{v_{0x} v_{0y}}{g}$$

$$\frac{v_0 \sin \alpha}{2} = v_0 \cos \alpha$$

$$\frac{1}{4} = \frac{\sqrt{3}}{2}$$