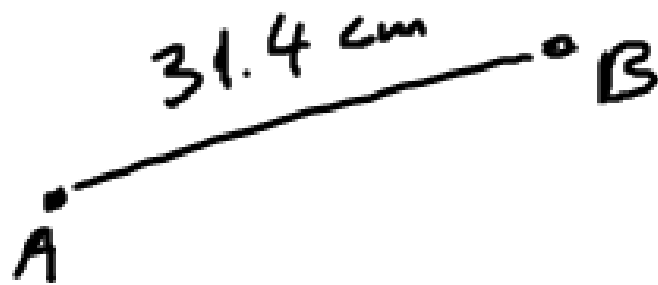


1.)



1 : 15000

$d(A, B) = ?$  [km]

$$\begin{aligned} 31.4 \text{ cm} &\rightarrow 31.4 \cdot 15000 \text{ cm} = 471\,000 \text{ cm} \\ &= 471\,000 \cdot 10^{-2} \text{ m} \\ &= 471\,000 \cdot 10^{-2} \cdot 10^{-3} \text{ km} \\ &= 4.71 \text{ km} \end{aligned}$$

$$2.) \quad 0.0632 \cdot 10^{12} \text{ s} =$$

$$= 0.0632 \cdot 10^{12} \cdot \frac{1}{31\,536\,000} \text{ god}$$

$$= 2004 \text{ god}$$

$$1 \text{ god} = 365 \cdot 24 \cdot 3600 \text{ s}$$

$$3.) \quad G = 981 \text{ N}$$

$$g = 9.81 \frac{\text{m}}{\text{s}^2}$$

---

$$m = ?$$

$$G = m \cdot g$$

$$m = \frac{G}{g} = \frac{981 \text{ N}}{9.81 \frac{\text{m}}{\text{s}^2}} = 100 \text{ kg}$$

$$4.) \quad 750 \frac{\text{kg}}{\text{m}^3} = 2 \frac{\text{g}}{\text{cm}^3}$$

$$750 \cdot \frac{\cancel{10^3} \text{ g}}{10^6 \text{ cm}^3} =$$

$$1 \text{ m} = 10^2 \text{ cm} \\ 1 \text{ m}^3 = 10^6 \text{ cm}^3$$

$$= 0.75 \frac{\text{g}}{\text{cm}^3}$$

5.)

$$v = 0.128 \frac{\text{m}}{\text{s}}$$

$$s = 25 \text{ m}$$

$$t = ?$$

$$t = \frac{s}{v} = 195 \text{ s}$$

6.)



$$1 \text{ cm} = 250 \text{ m}$$

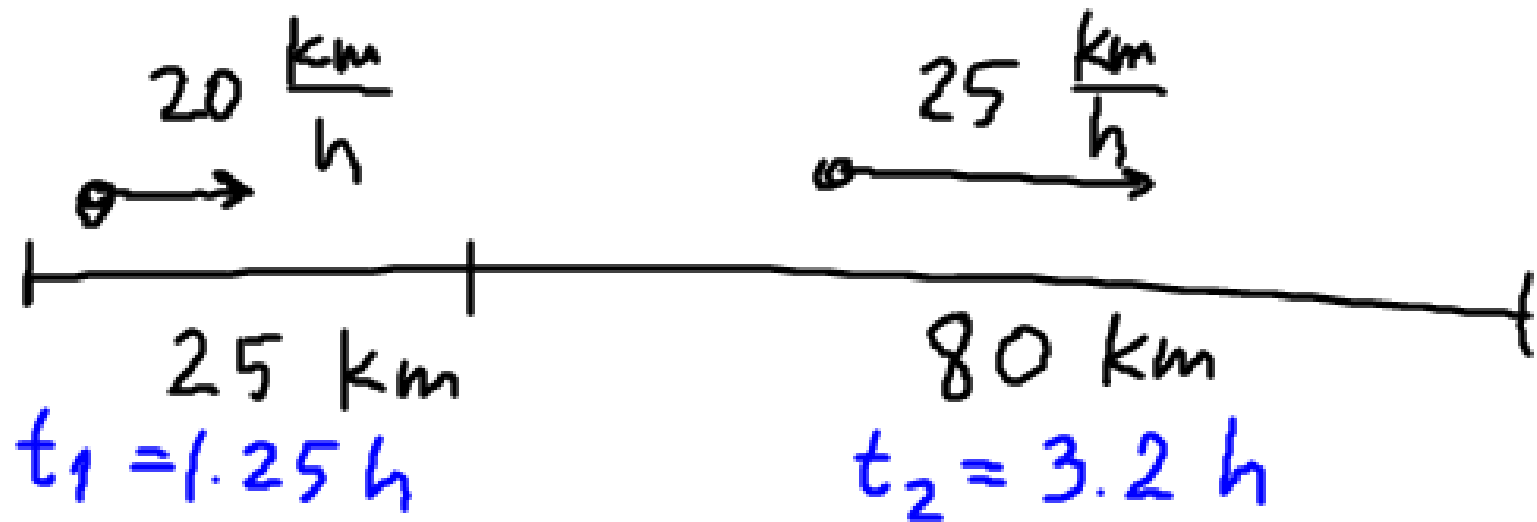
$$3 \text{ cm} = 750 \text{ m}$$

$$P = 250 \text{ m} \cdot 750 \text{ m} =$$

$$= 187\,500 \text{ m}^2 = 18.75 \text{ ha}$$

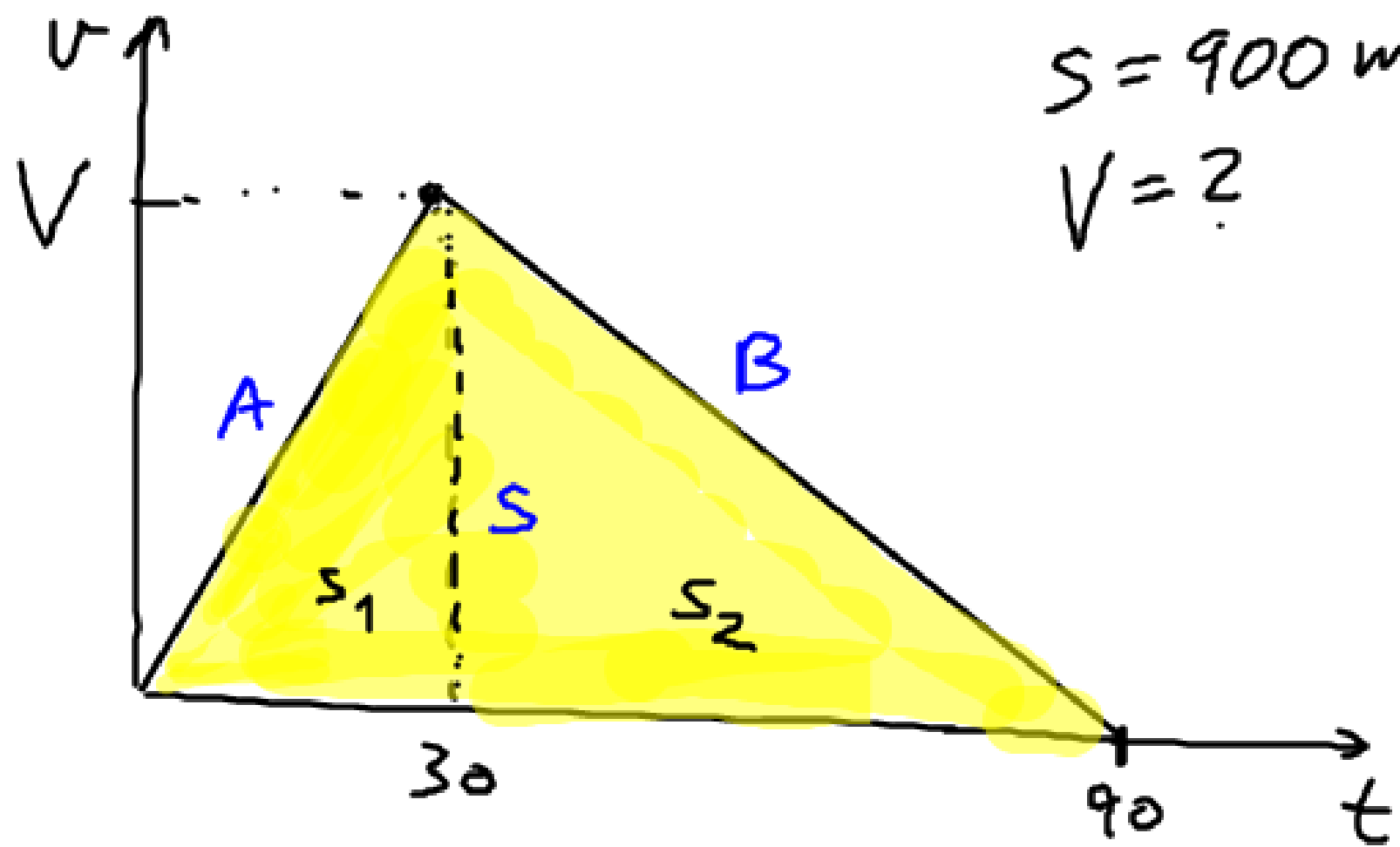
7.)

$$\bar{v} = \frac{\text{PUT}}{\text{VRIJEME}}$$



$$\bar{v} = \frac{105 \text{ km}}{4.45 \text{ h}} = 23.6 \frac{\text{km}}{\text{h}}$$

8.)



$S = 900 \text{ m}$   
 $V = ?$

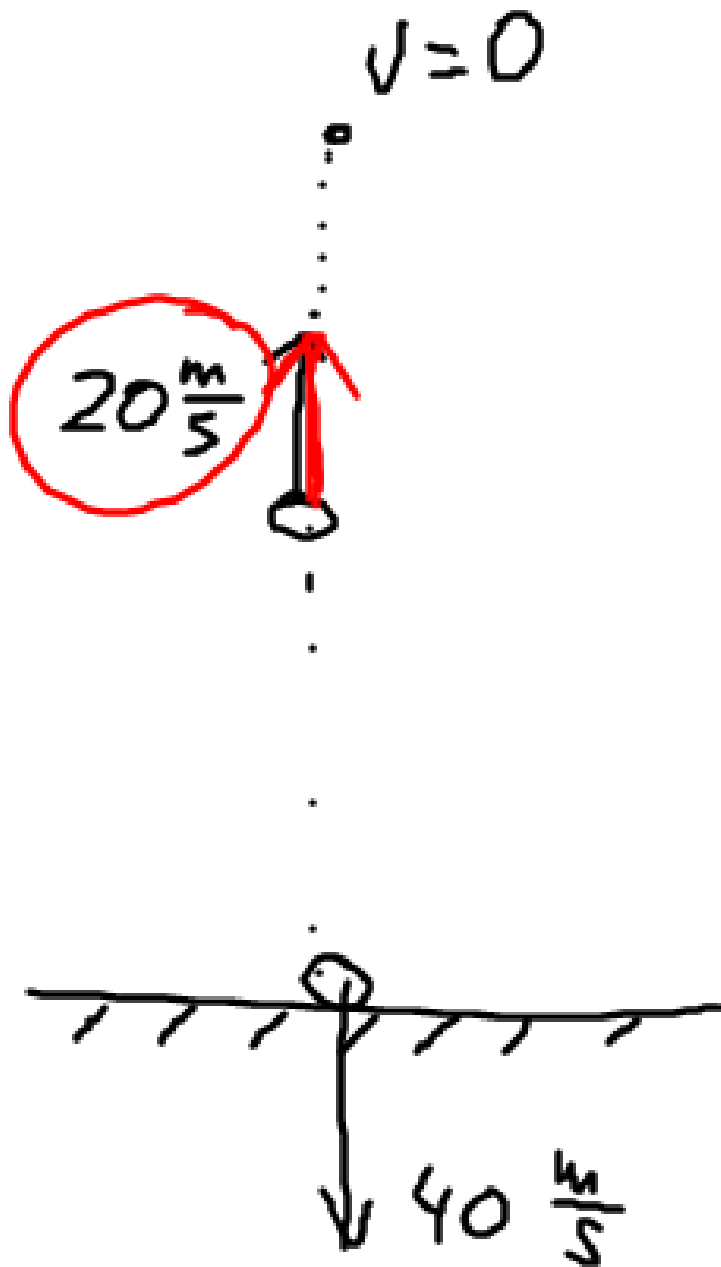
$$S = S_1 + S_2$$

$$900 = \frac{1}{2} \cdot 30 \cdot V + \frac{1}{2} \cdot 60 \cdot V$$

$$900 = 45 V \rightarrow V = 20 \frac{\text{m}}{\text{s}}$$



g.)



$$t_{uk} = 6s$$

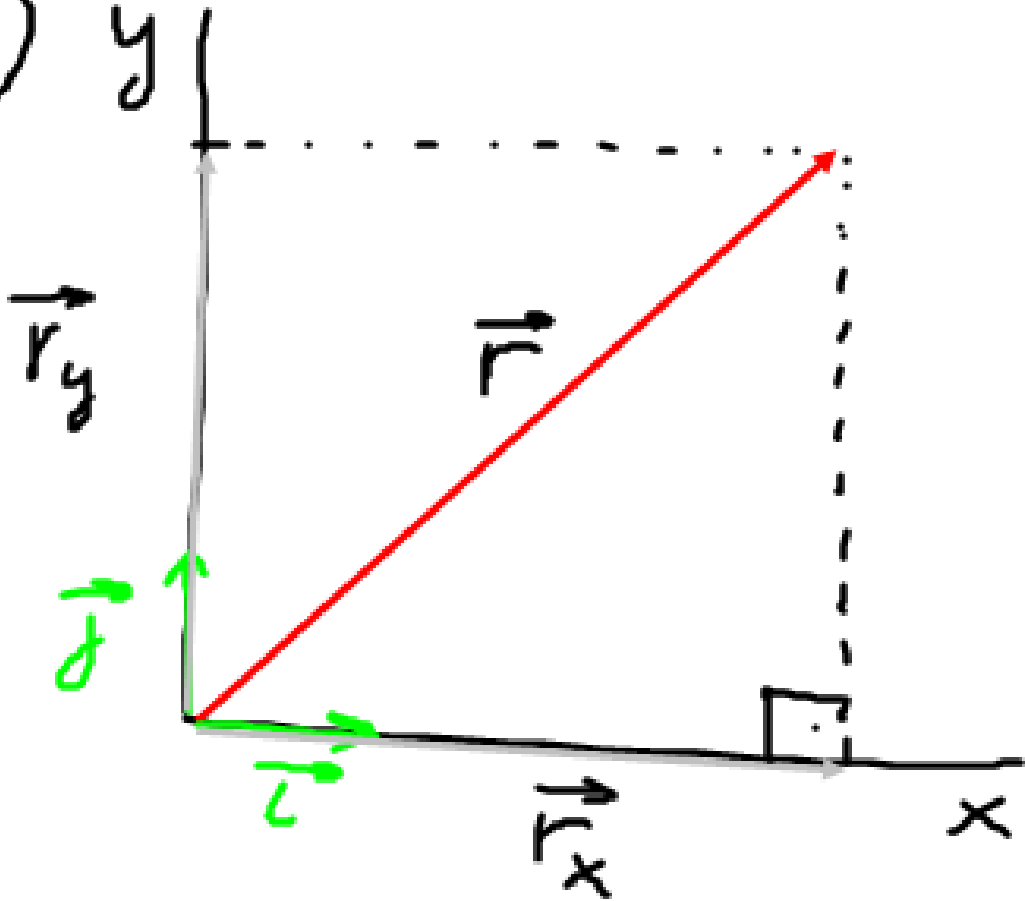
$$\underline{v = gt}$$

$$t' = \frac{v_0}{g} = 2s$$

imamo tamen  
4s za slob. pad!

$20 \frac{m}{s}$  prema gornje

10.)



$$\vec{r} = \vec{r}_x + \vec{r}_y$$

$$\vec{r}_x = x \cdot \vec{i}$$

$$\vec{r}_y = y \cdot \vec{j}$$

$$\vec{r} = x\vec{i} + y\vec{j}$$

$$|\vec{r}| = \sqrt{x^2 + y^2}$$

$$\vec{a} = \begin{pmatrix} 1 \\ 4 \end{pmatrix} = 1\vec{i} + 4\vec{j}$$

$$\vec{b} = \begin{pmatrix} -3 \\ 4 \end{pmatrix} = -3\vec{i} + 4\vec{j}$$

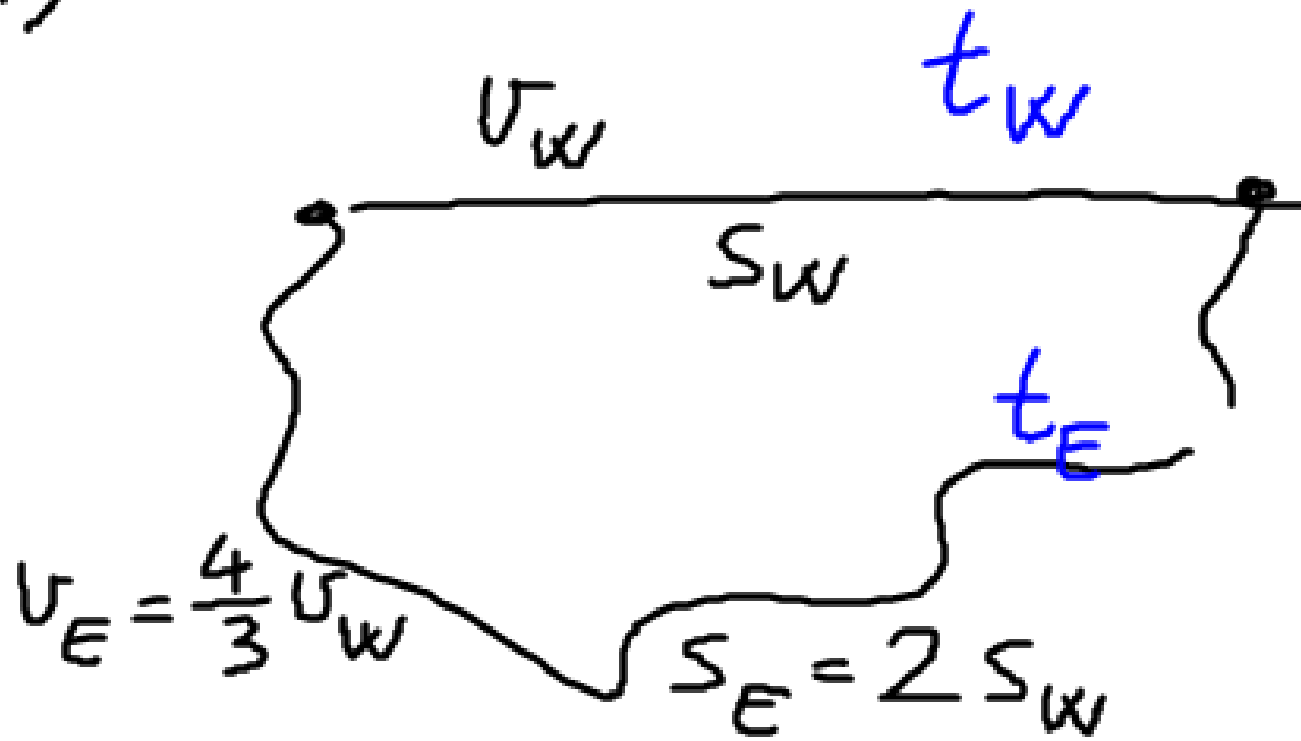
$$\underbrace{|2\vec{a} - \vec{b}|}_{c} = ?$$

$$c = 2 \cdot (1\vec{i} + 4\vec{j}) - (-3\vec{i} + 4\vec{j})$$

$$c = 5\vec{i} + 4\vec{j}$$

$$|c| = \sqrt{5^2 + 4^2} = \sqrt{41}$$

11.)



$$\frac{t_E}{t_w} = ?$$

$$t_E = \frac{S_E}{v_E}$$

$$t_W = \frac{S_W}{v_W}$$

$$\frac{t_E}{t_W} = \frac{\frac{S_E}{v_E}}{\frac{S_W}{v_W}} = \frac{S_E \cdot v_W}{v_E \cdot S_W} = \frac{2 \cdot \cancel{S_W} \cdot \cancel{v_W}}{\frac{4}{3} \cancel{v_W} \cdot \cancel{S_W}}$$

$$\frac{t_E}{t_W} = \frac{6}{4} = \frac{3}{2}$$

3:2

$$12.) \quad v = g \cdot t$$

$$v^2 = 2gh$$
$$v = \sqrt{2gh}$$

$$g_z > g_{Mj}$$

$$\underline{v_z > v_{Mj}}$$

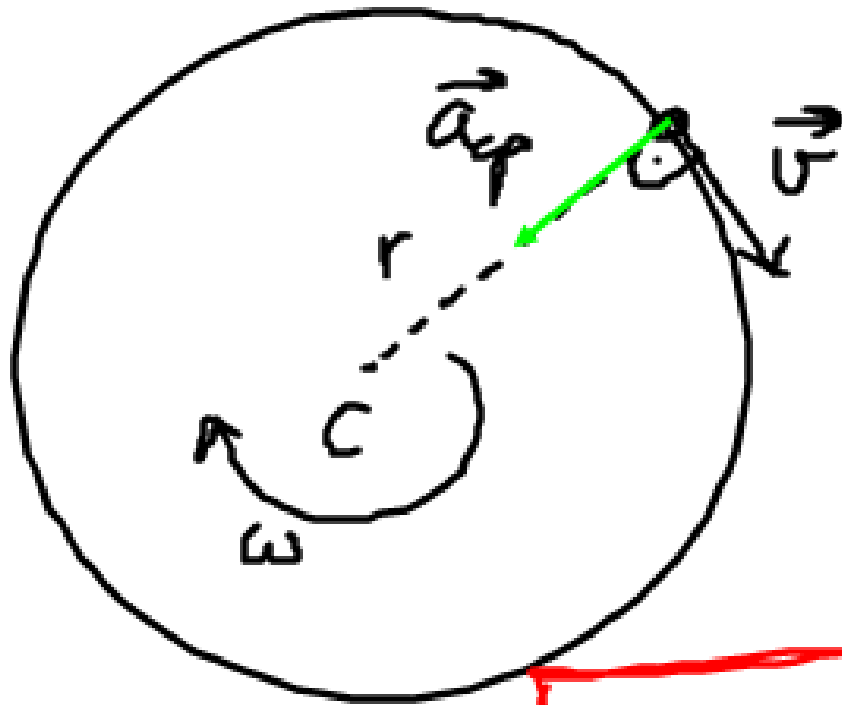
(3.)

$$t = \frac{1}{3000000000} \text{ s}$$

$$t = 3.3 \cdot 10^{-9} \text{ s}$$

$$t = 3.3 \text{ ns}$$

(4.)



$$a_{cp} = ?$$

$$a_{cp} = \frac{v^2}{r}$$

$$r = 2 \text{ m}$$
$$\omega = 2 \frac{\text{rad}}{\text{s}}$$

$$v = r \cdot \omega$$

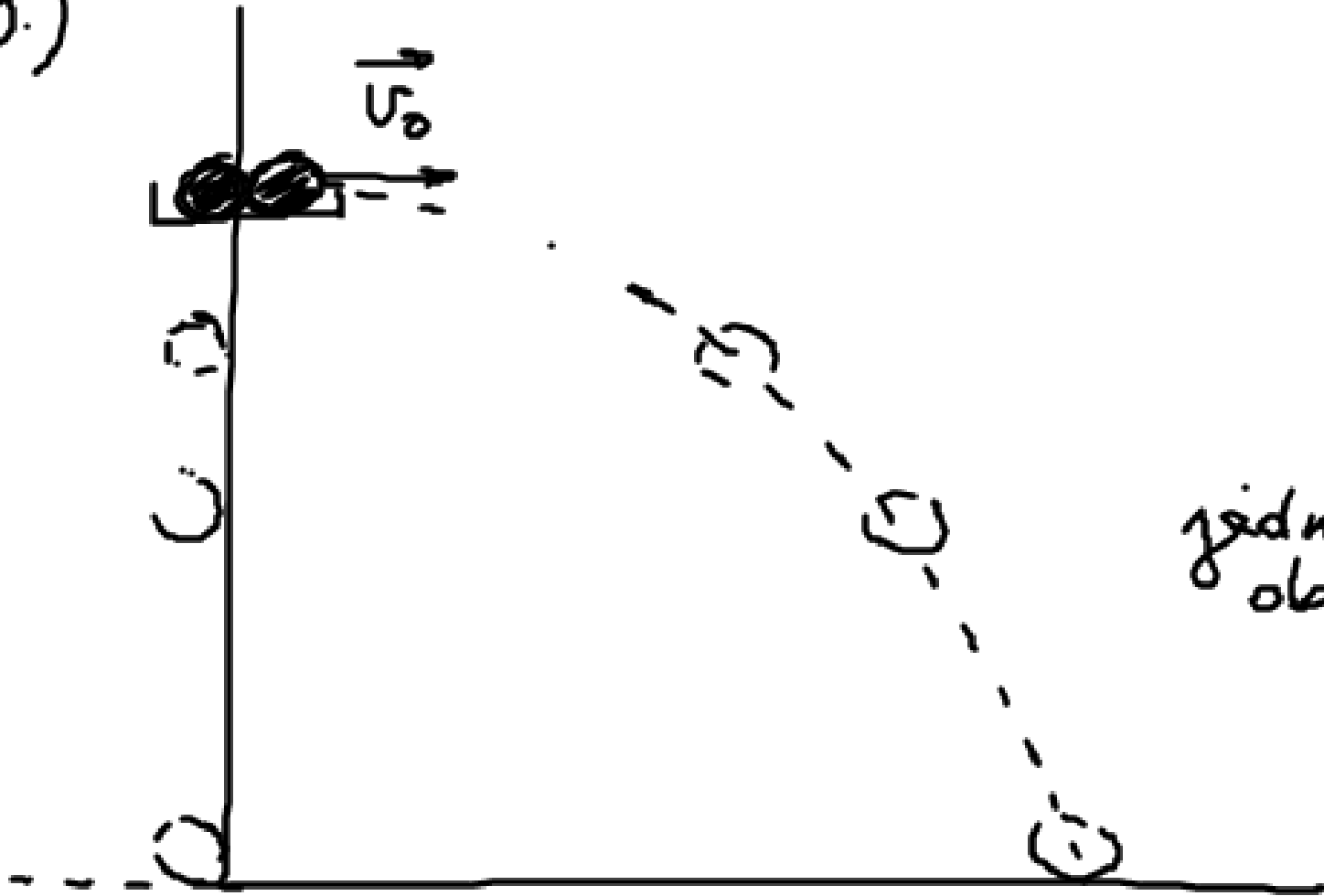
$$v = 2 \text{ m} \cdot 2 \frac{\text{rad}}{\text{s}}$$

$$v = 4 \frac{\text{m}}{\text{s}}$$

$$a_{cp} = \frac{16}{2} = 8 \frac{\text{m}}{\text{s}^2}$$

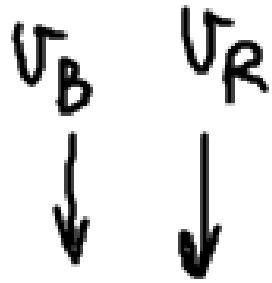
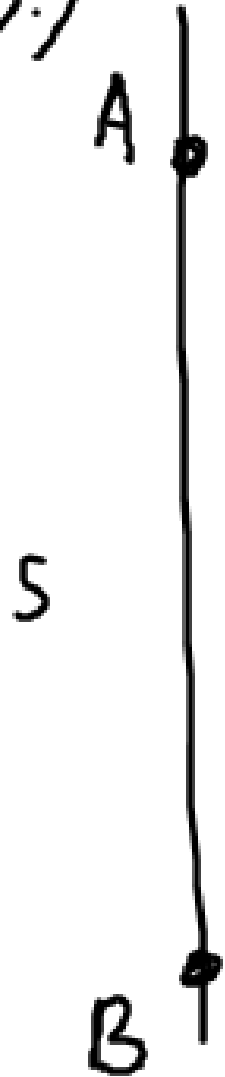


15.)



jednako u  
oba slučaja

16.)



$$S = 140 \text{ km}$$

$$t_{AB} = 5 \text{ h}$$

$$t_{BA} = 12 \text{ h}$$

$$\frac{S}{v_B + v_R} = 5 \text{ h}$$

$$\frac{S}{v_B - v_R} = 12 \text{ h}$$

$$v_B + v_R = 28$$

$$v_B - v_R = 11.67$$

$$\left. \begin{array}{l} v_B + v_R = 28 \\ v_B - v_R = 11.67 \end{array} \right\} +$$

---

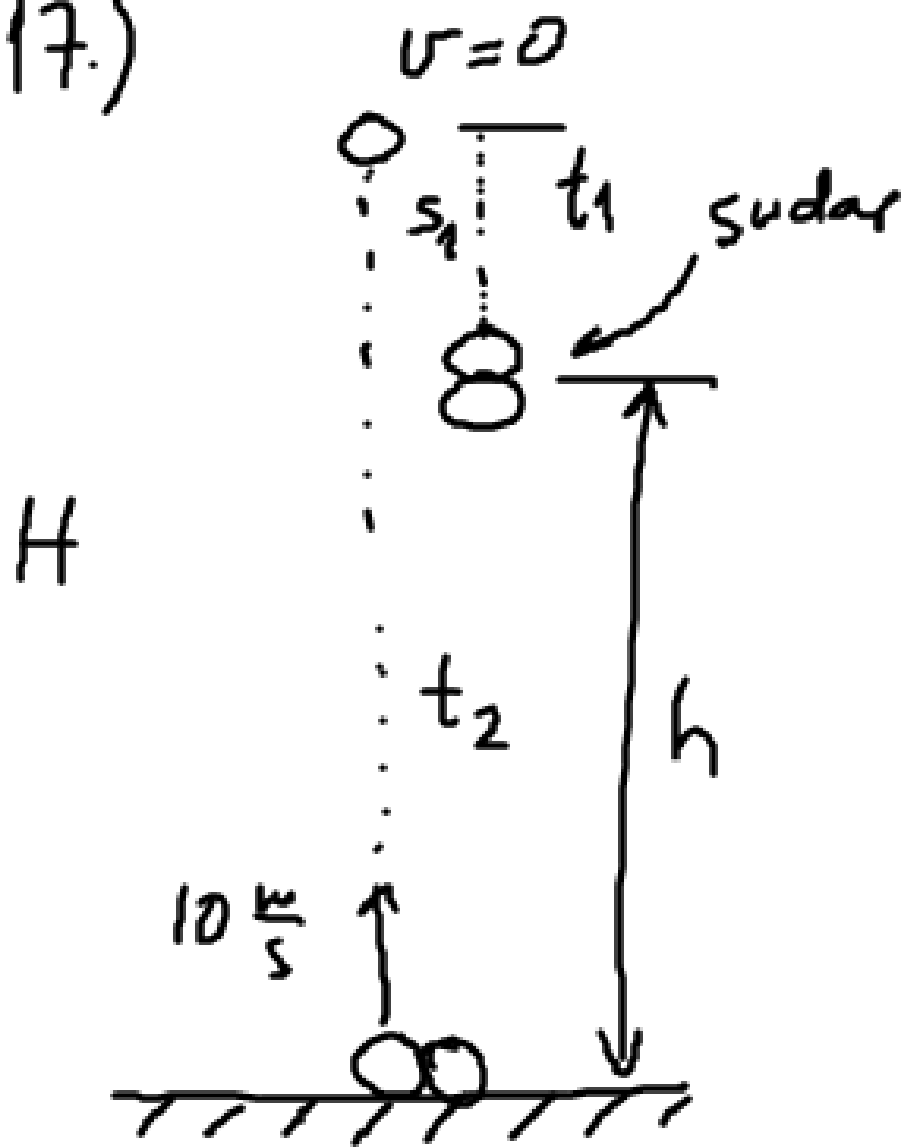
$$2v_B = 39.67$$

$$v_B = 19.83 \frac{\text{km}}{\text{h}}$$

$$v_R = 28 - v_B$$

$$v_R = 8.17 \frac{\text{km}}{\text{h}}$$

17.)



$$H = \frac{v_0^2}{2g}$$

$$H = 5 \text{ m}$$

za oba tijela jednako je vrijeme do sudara.

$$t_1 = t_2 = t$$

$$s_1 = \frac{1}{2} g t_1^2$$

$$h = v_0 t_2 - \frac{1}{2} g t_2^2$$

$$H - h = \frac{1}{2} g t^2$$

$$h = v_0 t - \frac{1}{2} g t^2$$

$$h = v_0 t - (H - h)$$

$$h = v_0 t - H + \cancel{h}$$

$$0 = v_0 t - H$$

$$H = v_0 t$$

$$5 = 10 t \quad t = 0.5 \text{ s}$$

$$s_1 = \frac{1}{2} g t^2 = \frac{1}{2} \cdot 10 \cdot 0.5^2 = 1.25 \text{ m}$$

$$h = 5 \text{ m} - 1.25 \text{ m} = 3.75 \text{ m}$$

18.) radimo s  $g = 9.81 \frac{\text{m}}{\text{s}^2}$

"

$$V^2 = V_0^2 + 2gs$$

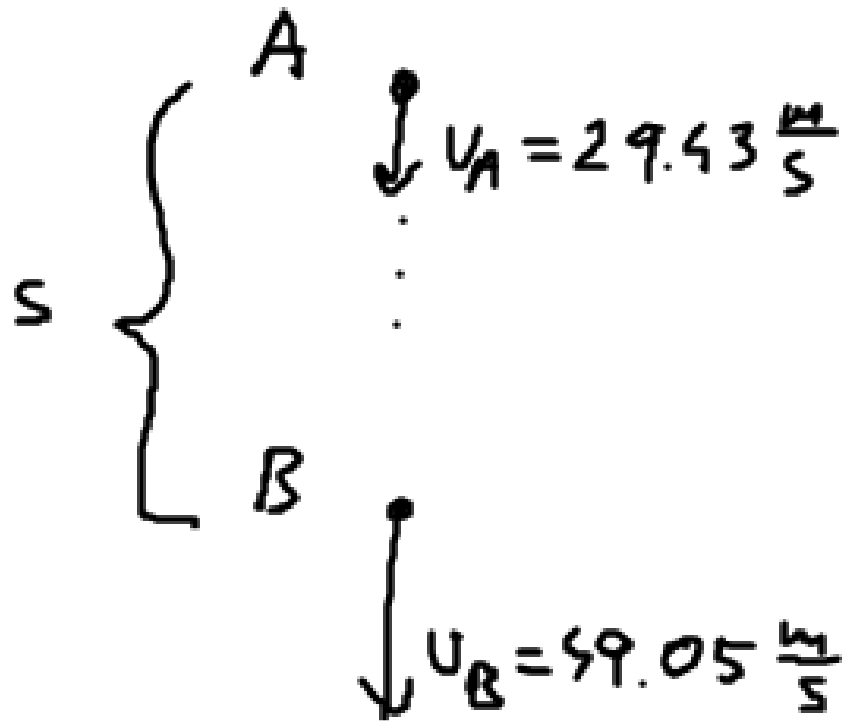
"

$$V_B^2 = V_A^2 + 2gs$$

$$2gs = V_B^2 - V_A^2$$

$$s = \frac{V_B^2 - V_A^2}{2g}$$

$$s = 78.5 \text{ m}$$



$$h = v_0 t + \frac{1}{2} g t^2$$

$$78.5 = 29.43 t + 4.9 t^2$$

$$4.9 t^2 + 29.43 t - 78.5 = 0$$

$$t_1 = \cancel{8} \text{ s} \quad t_2 = 2 \text{ s}$$



19.

2 kg

20.

