

$$(1/1) \quad a(a+1) = 462$$

$$a^2 + a = 462$$

$$a^2 + a - 462 = 0$$

$$a_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$a_{1,2} = \frac{-1 \pm \sqrt{1 + 1848}}{2}$$

$$a_{1,2} = \frac{-1 \pm 43}{2}$$

$$a_1 = \frac{-1 + 43}{2} \quad a_2 = \frac{-1 - 43}{2}$$

$$a_1 = 21 \quad a_2 = -22$$

brojevi<sub>1</sub> → a<sub>1</sub>, a<sub>1</sub>+1

brojevi<sub>2</sub> → a<sub>2</sub>, a<sub>2</sub>+1

brojevi<sub>1</sub> → 21, 22

brojevi<sub>2</sub> → -22, -21

$$\textcircled{1/3} \quad 2a(2a+2) = 224$$

$$4a^2 + 4a = 224$$

$$4a^2 + 4a - 224 = 0 \quad | :4$$

$$a^2 + a - 56 = 0$$

$$a_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$a_{1,2} = \frac{-1 \pm \sqrt{1 + 224}}{2}$$

$$a_{1,2} = \frac{-1 \pm 15}{2}$$

$$a_1 = \frac{-1 + 15}{2}$$

$$a_2 = \frac{-1 - 15}{2}$$

$$a_1 = 7$$

$$a_2 = -8$$

$$\underline{\text{brojevi}_1 \rightarrow 2a_1, 2a_1 + 2}$$

$$\underline{\text{brojevi}_2 \rightarrow 2a_2, 2a_2 + 2}$$

$$\textcircled{\text{brojevi}_1 \rightarrow 14, 16}$$

$$\textcircled{\text{brojevi}_2 \rightarrow -16, -14}$$

$$8. \quad 1000 - \left(\frac{p}{100} \cdot 1000\right) = c_1 \quad p\% = \frac{p}{100}$$

$$c_1 - \left(\frac{p}{100} \cdot c_1\right) = 810$$

$$1000 - (p \cdot 10) = c_1$$

$$c_1 = 1000 - 10p$$

substitucija

$$1000 - 10p - \frac{p(1000 - 10p)}{100} = 810$$

$$1000 - 10p - \frac{10p(100 - p)}{100} = 810$$

$$1000 - 10p - \frac{100p - p^2}{10} = 810 \quad | \cdot 10$$

$$10000 - 100p - 100p + p^2 = 8100$$

$$p^2 - 200p + 1900 = 0$$

$$p_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$p_{1,2} = \frac{200 \pm \sqrt{40000 - 7600}}{2}$$

$$p_{1,2} = \frac{200 \pm 180}{2}$$

$$p_{1,2} = 100 \pm 90$$

$$p_1 = 100 + 90$$

$$p_1 = 190$$

X

ne može biti jer bi  
onda postotak iznosio  
190% te bi  $c_1$  bila  
niža od 0 kn - što je nemoguće

$$p_2 = 100 - 90$$

$$p_2 = 10 \quad \checkmark$$

13.

$$O = 23 \text{ cm}$$

$$P = 30 \text{ cm}^2$$

$$2a = 23 - 2b / 2$$

$$2a + 2b = 23 \rightarrow$$

$$a = \frac{23 - 2b}{2}$$

$$a \cdot b = 30 \leftarrow$$

substitucija

$$b \left( \frac{23 - 2b}{2} \right) = 30$$

$$\frac{23b - 2b^2}{2} = 30 \quad | \cdot 2$$

$$23b - 2b^2 = 60$$

$$-2b^2 + 23b - 60 = 0$$

$$b_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$b_{1,2} = \frac{-23 \pm \sqrt{529 - 480}}{-4}$$

$$b_{1,2} = \frac{-23 \pm 7}{-4}$$

$$b_1 = \frac{-23 + 7}{-4}$$

$$b_2 = \frac{-23 - 7}{-4}$$

$$b_1 = 4 \text{ cm}$$

$$b_2 = 7,5 \text{ cm}$$

$$a_1 = \frac{23 - 2b_1}{2}$$

$$a_2 = \frac{23 - 2b_2}{2}$$

$$a_1 = 7,5 \text{ cm}$$

$$a_2 = 4 \text{ cm}$$

$$\textcircled{17.} \quad \frac{n(n+1)}{2} = 1035 \cdot 2$$

$$n(n+1) = 2070$$

$$\frac{n(n+1)}{2} \Rightarrow \underline{\text{Gaussova dosjetka}}$$

$$n^2 + n - 2070 = 0$$

$$n_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$n_{1,2} = \frac{-1 \pm \sqrt{1 + 8280}}{2}$$

$$n_{1,2} = \frac{-1 \pm 91}{2}$$

$$n_1 = \frac{-1 + 91}{2}$$

$$n_2 = \frac{-1 - 91}{2}$$

$$\textcircled{n_1 = 45} \checkmark$$

$$n_2 = -46 \times$$

↳ -46 nije prirodan broj

23)  $V = 64 \text{ L}$  U spremniku ostaje  $49 \text{ L}$  Alkohola.



$x =$  prvo odlijevanje

prvo odlijevanje -  $\frac{x}{64}$  od ukupne količine alkohola

drugo odlijevanje - ista količina od ukupne tekućine

$$\hookrightarrow \frac{x}{64} \cdot (64 - x)$$

količina koja je ostala nakon 2. odlijevanja:

$$64 - x - \frac{x}{64} \cdot (64 - x) = 49 / 64$$

$$64 - x - \frac{x}{64} \cdot (64 - x) = 49 \text{ L}$$

$$4096 - 64x - x(64 - x) = 3136$$

$$4096 - 64x - 64x + x^2 = 3136$$

$$x^2 - 128x + 960 = 0$$

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x_{1,2} = \frac{128 \pm \sqrt{16384 - 3840}}{2}$$

$$x_{1,2} = \frac{128 \pm 112}{2}$$

$$x_{1,2} = 64 \pm 56$$

$$x_1 = 64 + 56$$

$$x_2 = 64 - 56$$

$$x_1 = 120 \text{ L}$$

$$x_2 = 8 \text{ L}$$

$\hookrightarrow$  nemoguće jer je veće od ukupnog volumena

1. odlijevanje = 8 L čistog alkohola

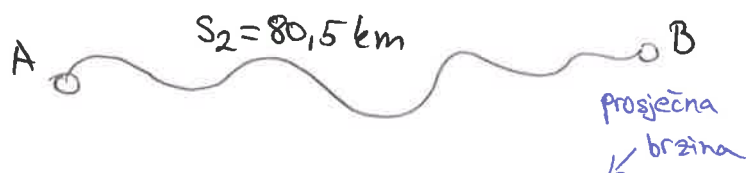
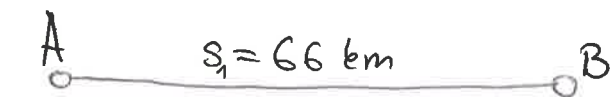
2. odlijevanje = 7 L čistog alkohola

$$= \frac{x}{64} \cdot (64 - x)$$

$$= \frac{8}{64} \cdot (64 - 8)$$

$$= 7 \text{ L}$$

27.



$$t_1 = t_{\text{vlak}}$$

$$t_2 = t_{\text{brod}}$$

$$t_1 = t_2 - 4,25$$

$$v_1 = v_2 + 30$$

$$v_2 = \bar{v}_2$$

$$15 \text{ min} = 0,25 \text{ h}$$

$$v = \frac{s}{t} \rightarrow s = v \cdot t$$

$$s_1 = v_1 \cdot t_1$$

$$s_2 = v_2 \cdot t_2$$

$$66 = v_1 \cdot t_1$$

$$80,5 = v_2 \cdot t_2$$

$$t_2 = \frac{80,5}{v_2}$$

$$66 = (v_2 + 30) (t_2 - 4,25)$$

$$(v_2 + 30) \left( \frac{80,5}{v_2} - 4,25 \right) = 66$$

$$80,5 - 4,25 v_2 + \frac{2415}{v_2} - 127,5 = 66 \quad | \cdot v_2$$

$$80,5 v_2 - 4,25 v_2^2 + 2415 - 127,5 v_2 = 66 v_2$$

$$-4,25 v_2^2 - 113 v_2 + 2415 = 0 \quad | \cdot (-1)$$

$$4,25 v_2^2 + 113 v_2 - 2415 = 0$$

$$v_{2,1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$v_{2,1,2} = \frac{-113 \pm \sqrt{12769 + 41055}}{8,5}$$

$$v_{2,1,2} = \frac{-113 \pm 232}{8,5}$$

$$v_{2,1} = \frac{-113 + 232}{8,5}$$

$$v_{2,2} = \frac{-113 - 232}{8,5}$$

$$v_{2,1} = 14 \text{ km/h} \checkmark$$

$$v_{2,2} = -40,59 \text{ km/h} \times \rightarrow \text{brzina, ovdje, sigurno pozitivna}$$

sigurno različit od 0

$$v_{\text{brod}} = 14 \text{ km/h}$$

$$\bar{v}_2 = 14 \text{ km/h}$$

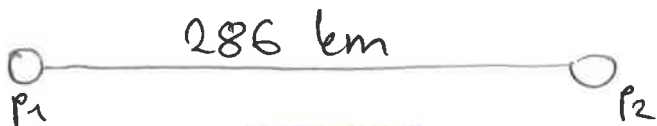
$$v_1 = v_2 + 30$$

$$v_1 = 14 + 30$$

$$\bar{v}_1 = 44 \text{ km/h}$$

$$v_{\text{vlak}} = 44 \text{ km/h}$$

29.



$$60 \text{ min} = \frac{2}{3} \text{ h}$$

$$s_1 = s_2 \rightarrow s = v \cdot t$$

$$v = \bar{v}$$

$$t_1 = t_2 - \frac{2}{3}$$

$$v_1 = v_2 + 12$$

$$v_1 t_1 = v_2 t_2$$

$$t_2 = \frac{s}{v_2} = \frac{286}{v_2}$$

$$(v_2 + 12) \left( t_2 - \frac{2}{3} \right) = v_2 t_2$$

$$(v_2 + 12) \left( \frac{286}{v_2} - \frac{2}{3} \right) = v_2 \cdot \frac{286}{v_2}$$

brzina sigurno nije 0

$$286 - \frac{2v_2}{3} + \frac{3432}{v_2} - 8 = 286 \quad | \cdot 3v_2$$

$$858v_2 - 2v_2^2 + 10296 - 24v_2 = 858v_2$$

$$-2v_2^2 - 24v_2 + 10296 = 0 \quad | : (-2)$$

$$v_2^2 + 12v_2 - 5148 = 0$$

$$v_{2,1,2} = \frac{-12 \pm \sqrt{144 + 20592}}{2}$$

$$v_{2,1,2} = \frac{-12 \pm 144}{2}$$

$$v_{2,1,2} = -6 \pm 72$$

brzina 1. vlaka =  $\bar{v}_1 = 78 \text{ km/h}$   
brzina 2. vlaka =  $\bar{v}_2 = 66 \text{ km/h}$

brzina je, u ovom slučaju, pozitivna

$$v_{2,1} = -6 + 72$$

$$v_{2,2} = -6 - 72$$

$$v_{2,1} = 66 \text{ km/h} \checkmark$$

$$v_{2,2} = -78 \text{ km/h} \times$$

$$v_1 = v_2 + 12$$

$$v_1 = 66 + 12$$

$$v_1 = 78 \text{ km/h}$$