4. Trigonometrija pravokutnog trokuta

Formule koje koristimo u rješavanju zadataka:

$$\sin\sphericalangle = \frac{\text{kateta nasuprot kuta}}{\text{hipotenuza}} \qquad \boldsymbol{\sin\alpha = \frac{a}{c}} \qquad \boldsymbol{\sin\beta = \frac{b}{c}}$$

$$\cos\sphericalangle = \frac{\text{kateta uz kut}}{\text{hipotenuza}} \qquad \boldsymbol{\cos\alpha = \frac{b}{c}} \qquad \boldsymbol{\cos\beta = \frac{a}{c}}$$

$$\operatorname{tg}\sphericalangle = \frac{\text{kateta nasuprot kuta}}{\text{kateta uz kut}} \qquad \boldsymbol{\operatorname{tg}\alpha = \frac{a}{b}} \qquad \boldsymbol{\operatorname{tg}\beta = \frac{b}{a}}$$

$$\operatorname{ctg}\sphericalangle = \frac{\text{kateta uz kut}}{\text{kateta nasuprot kuta}} \qquad \boldsymbol{\operatorname{ctg}\alpha = \frac{b}{a}} \qquad \boldsymbol{\operatorname{ctg}\beta = \frac{a}{b}}$$

Izvedene formule :

$$a = c\cdot\sin\alpha = b\cdot\operatorname{tg}\alpha = c\cdot\cos\beta = b\cdot\operatorname{ctg}\beta = \frac{b}{\operatorname{ctg}\alpha}$$

$$b = c\cdot\cos\alpha = c\cdot\sin\beta = a\cdot\operatorname{tg}\beta = a\cdot\operatorname{ctg}\alpha = \frac{a}{\operatorname{tg}a}$$

$$c = \frac{a}{\sin\alpha} = \frac{b}{\sin\beta} = \frac{a}{\cos\beta} = \frac{b}{\cos\alpha}$$

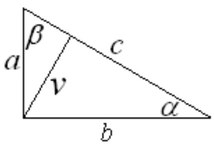
Trigonometrijske formule za drugi razred srednje škole:
www.maat-fiiz.com

Osnovne relacije

$$\sin^2\alpha + \cos^2\alpha = 1 \qquad \mathrm{tg}\,\alpha = \frac{\sin\alpha}{\cos\alpha}$$

$$1 + \mathrm{tg}^2\alpha = \frac{1}{\cos^2\alpha} \qquad \mathrm{ctg}\,\alpha = \frac{\cos\alpha}{\sin\alpha}$$

$$1 + \mathrm{ctg}^2\alpha = \frac{1}{\sin^2\alpha} \qquad \mathrm{tg}\,\alpha \cdot \mathrm{ctg}\,\alpha = 1$$



$$\sin\beta = \frac{v}{a} \qquad \sin\alpha = \frac{v}{b}$$

$$v = a\cdot\sin\beta \qquad v = b\cdot\sin\alpha$$

$$a = \frac{v}{\sin\beta} \qquad b = \frac{v}{\sin\alpha}$$

Polumjer kružnice :

$$r = \frac{c}{2} = \frac{a}{2\cdot\sin\alpha} = \frac{b}{2\cdot\cos\alpha}$$ (opisane pravokutnom trokutu)

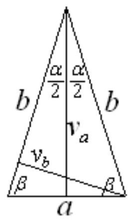
$$\rho = c\cdot\sin\frac{\alpha}{2}\cdot\left(\cos\frac{\alpha}{2} - \sin\frac{\alpha}{2}\right)$$ (upisan pravokutnom trokutu)

Površina pravokutnog trokuta

$$P_\triangle = \frac{a\cdot b}{2} = \frac{c\cdot v}{2} = \frac{a\cdot c\cdot\sin\beta}{2} = \frac{b\cdot c\cdot\sin\alpha}{2}$$

$$P_\triangle = \frac{a^2\cdot\mathrm{tg}\,\beta}{2} = \frac{b^2\cdot\mathrm{tg}\,\alpha}{2} = \frac{c^2\cdot\sin 2\alpha}{4}$$

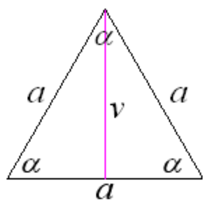
Jednakokračan trokut

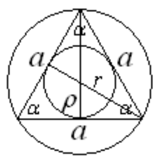


$$P = \frac{a\cdot v_a}{2} \qquad P = \frac{b\cdot v_b}{2} \qquad o = a + 2b$$

$$b^2 = v_a^2 + \left(\frac{a}{2}\right)^2 \qquad \frac{\alpha}{2} + \beta = 90^\circ$$

Istostraničan trokut





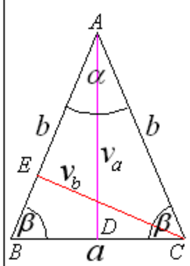
$$\alpha = 60^\circ$$

$$\sin\alpha = \frac{v}{a} \qquad v = a\cdot\sin\alpha \qquad a = \frac{v}{\sin\alpha}$$

$$P = \frac{a^2\sqrt{3}}{4} \qquad o = 3\cdot a$$

$$v^2 = a^2 - \left(\tfrac{a}{2}\right)^2 \qquad v = \frac{a\sqrt{3}}{2}$$

$$\rho = \frac{a\sqrt{3}}{6} \qquad r = \frac{a\sqrt{3}}{3}$$



Iz trokuta ADB imamo:

$$\sin\beta = \frac{v_a}{b} \qquad v_a = b\cdot\sin\beta \qquad b = \frac{v_a}{\sin\beta}$$

$$\mathrm{tg}\,\beta = \frac{2v_a}{a} \qquad v_a = \frac{a\cdot\mathrm{tg}\,\beta}{2} \qquad a = \frac{2v_a}{\mathrm{tg}\,\beta}$$

$$\sin\frac{\alpha}{2} = \frac{a}{2b} \qquad a = 2\cdot b\cdot\sin\frac{\alpha}{2} \qquad b = \frac{a}{2\cdot\sin\frac{\alpha}{2}}$$

$$\mathrm{tg}\frac{\alpha}{2} = \frac{a}{2v_a} \qquad a = 2\cdot v_a\cdot\mathrm{tg}\frac{\alpha}{2} \qquad v_a = \frac{a}{2\cdot\mathrm{tg}\frac{\alpha}{2}}$$

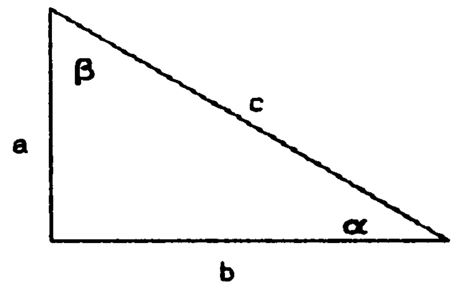
Iz trokuta BEC imamo :

$$\sin\beta = \frac{v_b}{a} \qquad v_b = a\cdot\sin\beta \qquad a = \frac{v_b}{\sin\beta}$$

Iz trokuta AEC imamo:

$$\sin\alpha = \frac{v_b}{b}$$

4.1. Definicije trigonometrijskih funkcija šiljastog kuta



$$\sin\alpha = \frac{a}{c} \qquad \sin\beta = \frac{b}{c}$$

$$\cos\alpha = \frac{b}{c} \qquad \cos\beta = \frac{a}{c}$$

$$\text{tg}\,\alpha = \frac{a}{b} \qquad \text{tg}\,\beta = \frac{b}{a}$$

$$\text{ctg}\,\alpha = \frac{b}{a} \qquad \text{ctg}\,\beta = \frac{a}{b}$$

$$\sin^2\alpha + \cos^2\alpha = 1$$

$$tg\ \alpha = \frac{\sin\alpha}{\text{cis}\,\alpha}$$

$$ctg\ \alpha = \frac{\cos\alpha}{\sin\alpha}$$

1. 1) $a = 4cm$

$c = 9cm$

$\sin\alpha = ?$ $\sin\beta = ?$

$\cos\alpha = ?$ $\cos\beta = ?$

$tg\alpha = ?$ $tg\beta = ?$

$ctg\alpha = ?$ $ctg\beta = ?$

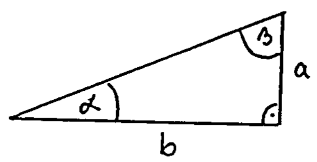
$$c^2 = a^2 + b^2$$
$$b = \sqrt{c^2 - a^2}$$
$$b = \sqrt{9^2 - 4^2}$$
$$b = \sqrt{81 - 16}$$
$$b = \sqrt{65}$$
$$b = 8{,}062$$

$$\sin\alpha = \frac{a}{c} = \frac{4}{9} \qquad \sin\beta = \frac{b}{c} = \frac{\sqrt{65}}{9}$$

$$\cos\alpha = \frac{b}{c} = \frac{\sqrt{65}}{9} \qquad \cos\beta = \frac{a}{c} = \frac{4}{9}$$

$$tg\,\alpha = \frac{a}{b} = \frac{4}{\sqrt{65}} \qquad tg\,\beta = \frac{b}{a} = \frac{\sqrt{65}}{4}$$

$$ctg\,\alpha = \frac{b}{a} = \frac{\sqrt{65}}{4} \qquad ctg\,\beta = \frac{a}{b} = \frac{4}{\sqrt{65}}$$



Većinu ovih zadataka sam rješavao daleke 1998.g. na računalu ATARI
ovo su samo skenirane stranice iz te skripte pa vam otisak možda neće uvijek biti najbolje kvalitete

4.4. Primjene na pravokutni trokut

1. 1.) $a = 2{,}5$ cm
$c = 13$ cm

$$\sin\alpha = \frac{a}{c}$$

$$\sin\alpha = \frac{2{,}5}{13}$$

$$\sin\alpha = 0{,}192307 \quad / \sin^{-1}$$

$$\alpha = 11^\circ 05'$$

$$\beta = 90^\circ - \alpha$$

$$\beta = 89^\circ 60' - 11^\circ 05'$$

$$\beta = 78^\circ 55'$$

2.) $b = 15{,}2$ cm
$c = 20{,}4$ cm

$$\cos\alpha = \frac{b}{c}$$

$$\cos\alpha = \frac{15{,}2}{20{,}4}$$

$$\cos\alpha = 0{,}745098 \quad / \cos^{-1}$$

$$\alpha = 41^\circ 49' 57''$$

$$\alpha = 41^\circ 50'$$

$$\beta = 90^\circ - \alpha$$

$$\beta = 89^\circ 60' - 41^\circ 50'$$

$$\beta = 48^\circ 10'$$

4.) $a = 4{,}1$ cm
$b = 12{,}7$ cm

$$tg\,\alpha = \frac{a}{b}$$

$$tg\,\alpha = \frac{4{,}1}{12{,}7}$$

$$tg\,\alpha = 0{,}322835 \quad / tg^{-1}$$

$$\alpha = 17^\circ 53' 30''$$

$$\alpha = 17^\circ 54'$$

$$\beta = 90^\circ - \alpha$$

$$\beta = 89^\circ 60' - 17^\circ 54'$$

$$\beta = 72^\circ 06'$$

5.) $b = 101$ cm
$c = 201$ cm

$$\cos\alpha = \frac{b}{c}$$

$$\cos\alpha = \frac{101}{201}$$

$$\cos\alpha = 0{,}502486 \quad / \cos^{-1}$$

$$\alpha = 59^\circ 50' 07''$$

$$\alpha = 59^\circ 50'$$

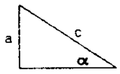
$$\beta = 90^\circ - \alpha$$

$$\beta = 89^\circ 60' - 59^\circ 50'$$

$$\beta = 30^\circ 10'$$

4.4.

4. kateta : hipotenuza = 15 : 22 — sada imamo dvije mogućnosti kateta može biti a ili b to je potpuno svejedno ja ću uzeti da je kateta = a



$a : c = 15 : 22$

$\frac{a}{c} = \frac{15}{22}$

kako je $\sin\alpha = \frac{a}{c}$ } prvu uvrstimo u drugu $\sin\alpha = \frac{15}{22}$

$\sin\alpha = 0{,}68181818 \quad /\sin^{-1}$

$\alpha = 42^\circ 59' 09''$

$\alpha = 42^\circ 59'$

$\beta = 90^\circ - \alpha$

$\beta = 89^\circ 60' - 42^\circ 59'$

$\beta = 47^\circ 01'$

5. $a : b = 19 : 28$

$\frac{a}{b} = \frac{19}{28}$

kako je $\operatorname{tg}\alpha = \frac{a}{b}$ } prvu uvrstimo u drugu $\operatorname{tg}\alpha = \frac{19}{28}$

$\operatorname{tg}\alpha = 0{,}678571 \quad /\operatorname{tg}^{-1}$

$\alpha = 34^\circ 09' 35''$

$\alpha = 34^\circ 10'$

$\beta = 90^\circ - \alpha$

$\beta = 89^\circ 60' - 34^\circ 10'$

$\beta = 55^\circ 50'$

6. Jedna kateta triput je veća od druge to pišemo → $a : b = 3 : 1$ ili kao razlomak $\frac{a}{b} = \frac{3}{1}$ → $\frac{a}{b} = 3$

kako je $\operatorname{tg}\alpha = \frac{a}{b}$ i u zadatku zadan i omjer $\frac{a}{b} = 3$ to je → $\operatorname{tg}\alpha = \frac{a}{b}$

$\operatorname{tg}\alpha = 3 \quad /\operatorname{tg}^{-1}$

$\alpha = 71^\circ 33' 54''$

$\alpha = 71^\circ 34'$ — kako zbrj šiljatih kuteva u pravokutnom trokutu uvijek iznosi 90° . odmah je vidljivo da je β manja od α

7. jedna kateta je pet puta kraća od hipotenuze → pišemo → $a : c = 1 : 5$ ili $\frac{a}{c} = \frac{1}{5}$

kako je $\sin\alpha = \frac{a}{c}$ i $\frac{a}{c} = \frac{1}{5}$

$\sin\alpha = \frac{1}{5}$

$\sin\alpha = 0{,}2 \quad /\sin^{-1}$

$\alpha = 11^\circ 32' 13''$

$\alpha = 11^\circ 32'$

$\beta = 90^\circ - \alpha$

$\beta = 89^\circ 60' - 11^\circ 32'$

$\beta = 78^\circ 28'$

8. jedan je šiljati kut triputa veći od drugoga

$\alpha = 3 \cdot \beta$ i $c = 20$ cm

kako je $\alpha + \beta = 90^\circ$ i $\alpha = 3 \cdot \beta$

tadaje $3 \cdot \beta + \beta = 90^\circ$

$4 \cdot \beta = 90^\circ \quad / : 4$

$\beta = 22^\circ 30'$

$\beta = 22^\circ 30'$

$\alpha = 90^\circ - \beta$

$\alpha = 89^\circ 60' - 22^\circ 30'$

$\alpha = 67^\circ 30'$

$\alpha = 67^\circ 30'$ i $c = 20$ cm

$a = c \cdot \sin\alpha$

$a = 20 \cdot \sin 67^\circ 30'$

$a = 20 \cdot 0{,}9238795$

$a = 18{,}4776$

$a = 18{,}48$ cm

12. $a + c = 10{,}5$ i $\alpha = 38°50'$ 4.4.

sada iz $a + c = 10{,}5$

$a = 10{,}5 - c$

$a = c \cdot \sin\alpha$

$10{,}5 - c = c \cdot \sin\alpha$

$-c - c \cdot \sin\alpha = -10{,}5 \quad / \cdot (-1)$

$c + c \cdot \sin\alpha = 10{,}5$

$c \cdot (1 + \sin\alpha) = 10{,}5 \quad / : (1 + \sin\alpha)$

$$c = \frac{10{,}5}{1 + \sin\alpha}$$

$$c = \frac{10{,}5}{1 + \sin 38°50'} = \frac{10{,}5}{1 + 0{,}627057} = \frac{10{,}5}{1{,}627057}$$

$c = 6{,}45337$

$c = 6{,}45 \text{ cm}$

$a = c \cdot \sin\alpha$

$a = 6{,}45 \cdot 0{,}627057$

$a = 4{,}044518$

$a = 4{,}05 \text{ cm}$

$b^2 = c^2 - a^2$

$b^2 = 6{,}45^2 - 4{,}05^2$

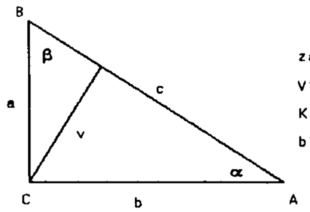
$b^2 = 25{,}2 \quad / \sqrt{\;}$

$b = 5{,}01996$

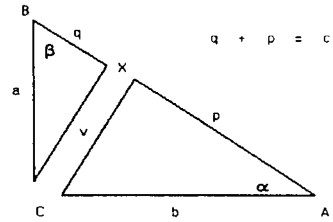
$b = 5{,}02 \text{ cm}$

Ovo NISU SVI zadaci, već naš izbor pojedinih zadataka iz naše skripte potpuno riješenih zadataka iz poglavlja TRIGONOMETRIJA PRAVOKUTNOG TROKUTA po školskoj zbirci ! – (za gimnazije)
cijelu skriptu o:
TRIGONOMETRIJI PRAVOKUTNOG TROKUTA potpuno riješenih zadataka po školskoj zbirci možete kupiti kod nas - po cijeni od 75 kn
narudžbe na mial: mim-sraga@zg.htnet.hr ili na 01-4578-431 ili www.maat-fiiz.com

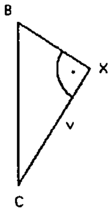
18. zadano $v = 20{,}4$ cm i $\alpha = 32^\circ 24'$ ... 4.4.



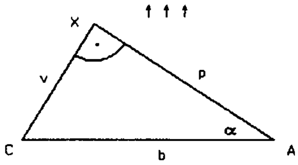
zadana je visina i jedan šiljasti kut . . .
Visina je okomica iz vrha C na stranicu c
Kada bi prerezali taj trokut po visini dobili bismo dva pravokutna trokuta → → →



$q + p = c$



↓ ↓ ↓



↑ ↑ ↑

uzmimo sada prvi trokut AXC → to je pravokutan trokut sa hipotenuzom b

$\operatorname{tg}\alpha = \frac{v}{p} \quad / \cdot p$

$p \cdot \operatorname{tg}\alpha = v \quad / : \operatorname{tg}\alpha$

$p = \frac{v}{\operatorname{tg}\alpha}$

$p = \frac{20{,}4}{\operatorname{tg} 32^\circ 40'} = \frac{20{,}4}{0{,}64116734} = 31{,}8169667$

$p = 31{,}82$ cm

nakon toga uzmemo drugi trokut CXB

$\alpha + \beta = 90^\circ$

$\beta = 90^\circ - \alpha$

$\beta = 89^\circ 60' - 32^\circ 40'$

$\beta = 57^\circ 20'$

$\operatorname{tg}\beta = \frac{v}{q} \quad / \cdot q$

$q \cdot \operatorname{tg}\beta = v \quad / : \operatorname{tg}\beta$

$q = \frac{v}{\operatorname{tg}\beta}$

$q = \frac{20{,}4}{\operatorname{tg} 57^\circ 20'} = \frac{20{,}4}{1{,}5596552}$

$q = 13{,}079814$

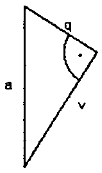
$q = 13{,}08$ cm

$p = 31{,}82$ cm $\qquad q = 13{,}08$ cm

$c = p + q$

$c = 31{,}82 + 13{,}08$

$c = 44{,}9$ cm



$a^2 = v^2 + q^2$

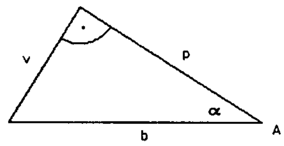
$a^2 = 20{,}4^2 + 13{,}08^2$

$a^2 = 416{,}15 + 171{,}0864$

$a^2 = 587{,}2464 \quad / \sqrt{\ }$

$a = 24{,}23316735$

$a = 24{,}23$ cm



$b^2 = v^2 + p^2$

$b^2 = 20{,}4^2 + 31{,}82^2$

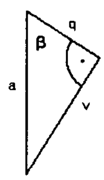
$b^2 = 416{,}16 + 1012{,}5124$

$b^2 = 1428{,}6724 \quad / \sqrt{\ }$

$b = 37{,}797783$

$b = 37{,}80$ cm

OVAJ zadatak mogli smo riješiti i na drugi način tako da prvo računamo a i b stranice pa tek onda c stranu . . .



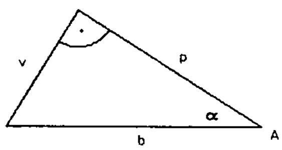
$\alpha + \beta = 90$

$\beta = 57^\circ 20'$

$\sin\beta = \frac{v}{a}$

$a = \frac{v}{\sin\beta} = \frac{20{,}4}{\sin 57^\circ 20'} = \frac{20{,}4}{0{,}84182494}$

$a = 24{,}23$ cm



$\operatorname{tg}\alpha = \frac{v}{p} \quad / \cdot p$

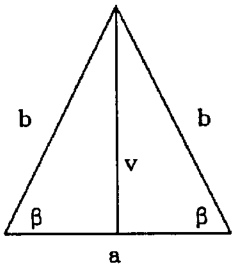
$p = \frac{v}{\operatorname{tg}\alpha}$

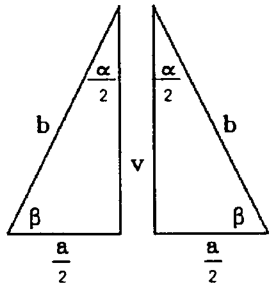
isto kao i gore . . .

pa sada računamo c stranicu preko $c^2 = a^2 + b^2$ bez računanja p i q . . . obadva načina su dc
ovaj drugi je nešto kraći . . .

4.5. Primjene u planimetriji

1.





RASTAVIMO OVAJ JEDNAKOKRAČAN TROKUT PO VISINI NA DVA PRAVOKUTNA TROKUTA

$\sin\beta = \frac{v}{b}$ $\cos\beta = \frac{a}{2\cdot b}$

$\operatorname{tg}\beta = \frac{2\cdot v}{a}$ $\operatorname{ctg}\beta = \frac{a}{2\cdot v}$

a) $a = 6{,}5$ cm
$b = 11$ cm

$\cos\beta = \frac{a}{2\cdot b}$

$\cos\beta = \frac{6{,}5}{2\cdot 11} = \frac{6{,}5}{22}$

$\cos\beta = 0{,}295445 \quad /\cos^{-1}$

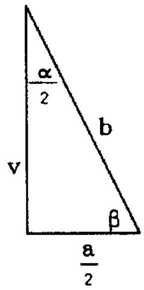
$\beta = 72^\circ 48' 55''$

$\beta = 72^\circ 49'$

$\frac{\alpha}{2} = 90^\circ - 72^\circ 49'$

$\frac{\alpha}{2} = 89^\circ 60' - 72^\circ 49'$

$\frac{\alpha}{2} = 17^\circ 11' \quad /\cdot 2 \rightarrow \alpha = 34^\circ 22'$



b) $a = 22{,}7$ cm
$b = 15{,}2$ cm

$\cos\beta = \frac{a}{2\cdot b}$

$\cos\beta = \frac{22{,}7}{2\cdot 15{,}2} = \frac{22{,}7}{30{,}4}$

$\cos\beta = 0{,}74671052 \quad /\cos^{-1}$

$\beta = 41^\circ 41' 38''$

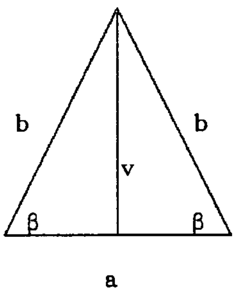
$\beta = 41^\circ 42'$

$\frac{\alpha}{2} = 89^\circ 60' - 41^\circ 42'$

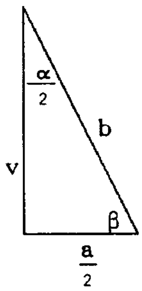
$\frac{\alpha}{2} = 48^\circ 18' \quad /\cdot 2$

$\alpha = 96^\circ 36'$

2.



← iz trokuta
izvadimo trokut →



$\sin\frac{\alpha}{2} = \frac{\frac{a}{2}}{b} = \frac{a}{2\cdot b}$

$\sin\frac{\alpha}{2} = \frac{a}{2\cdot b}$

$\cos\frac{\alpha}{2} = \frac{v}{b}$

1) $\alpha = 140^\circ \rightarrow \frac{\alpha}{2} = 70^\circ$
$a = 20$ cm

$\sin\frac{\alpha}{2} = \frac{a}{2\cdot b} \quad /\cdot b$

$b\cdot\sin\frac{\alpha}{2} = \frac{a}{2} \quad /:\sin\frac{\alpha}{2}$

$b = \frac{a}{2\cdot\sin\frac{\alpha}{2}}$

$b = \frac{20}{2\cdot\sin 70^\circ} = \frac{20}{2\cdot 0{,}939693} = 10{,}64178$

$b = 10{,}64$ cm

$\beta = 90^\circ - \frac{\alpha}{2} = 90^\circ - 70^\circ$

$\beta = 20^\circ$

2) $\alpha = 55^\circ \rightarrow \frac{\alpha}{2} = 27^\circ 30'$
$a = 8{,}5$ cm

$b = \frac{a}{2\cdot\sin\frac{\alpha}{2}}$

$b = \frac{8{,}5}{2\cdot\sin 27^\circ 30'} = \frac{8{,}5}{2\cdot 0{,}4617486}$

$b = \frac{8{,}5}{0{,}923497} = 9{,}2041$

$b = 9{,}2$ cm

$\beta = 90^\circ - \frac{\alpha}{2}$

$\beta = 89^\circ 60 - 27^\circ 30$

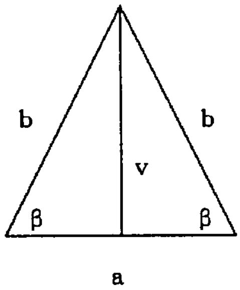
$\beta = 62^\circ 30'$

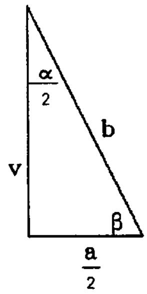
4.5.

3.

1)

$b = 45$ cm
$\beta = 12^\circ$





$\cos\beta = \frac{a}{2\cdot b} \quad / \cdot 2\cdot b$

$2\cdot b\cdot\cos\beta = a$

$a = 2\cdot b\cdot\cos\beta$

$a = 2\cdot 45\cdot\cos 12^\circ$

$a = 90\cdot 0,9781476$

$a = 88,03328$

$a = 88,03$ cm

$\alpha + 2\cdot\beta = 180^\circ$

$\alpha = 180^\circ - 2\cdot\beta$

$\alpha = 180^\circ - 2\cdot 12^\circ = 180^\circ - 24^\circ$

$\alpha = 156^\circ$

2) $b = 5,2$ cm
$\beta = 67^\circ 20'$

$a = 2\cdot b\cdot\cos\beta$

$a = 2\cdot 5,2\cdot\cos 67^\circ 20'$

$a = 10,4\cdot 0,3853693$

$a = 4,00784$

$a = 4,01$ cm

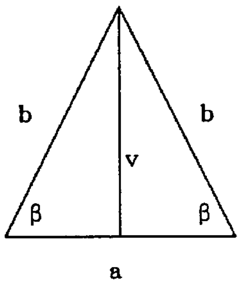
$\alpha = 180^\circ - 2\cdot\beta$

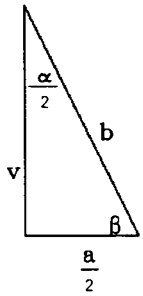
$\alpha = 180^\circ - 2\cdot 67^\circ 20' = 179^\circ 60' - 134^\circ 40'$

$\alpha = 45^\circ 20'$

4.

1)





zaano α i v : računamo po ↑ →

$\mathrm{tg}\frac{\alpha}{2} = \frac{\frac{a}{2}}{v}$

$\mathrm{tg}\frac{\alpha}{2} = \frac{a}{2\cdot v} \quad / \cdot 2\cdot v$

$2\cdot v\cdot\mathrm{tg}\frac{\alpha}{2} = a$

$a = 2\cdot v\cdot\mathrm{tg}\frac{\alpha}{2}$

$\sin\frac{\alpha}{2} = \frac{a}{2\cdot b}$

$\cos\frac{\alpha}{2} = \frac{v}{b} \quad / \cdot b \rightarrow \quad b\cdot\cos\frac{\alpha}{2} = v \quad / : \cos\frac{\alpha}{2}$

$b = \frac{v}{\cos\frac{\alpha}{2}}$

$\alpha = 101^\circ \rightarrow \frac{\alpha}{2} = 50^\circ 30'$
$v = 15$ cm

$a = 2\cdot v\cdot\mathrm{tg}\frac{\alpha}{2}$

$a = 2\cdot 15\cdot\mathrm{tg}\, 50^\circ 30'$

$a = 30\cdot 1,213097$

$a = 36,3929$

$a = 36,39$ cm

$b = \frac{v}{\cos\frac{\alpha}{2}}$

$b = \frac{15}{\cos 50^\circ 30'} = \frac{15}{0,636078} = 23,582$

$b = 23,58$ cm

2) $\alpha = 33^\circ \rightarrow \frac{\alpha}{2} = 16^\circ 30'$
$v = 112$ cm

$a = 2\cdot v\cdot\mathrm{tg}\frac{\alpha}{2}$

$a = 2\cdot 112\cdot\mathrm{tg}\, 16^\circ 30'$

$a = 224\cdot 02962135 = 66,35182$

$a = 66,35$ cm

$b = \frac{v}{\cos\frac{\alpha}{2}}$

$b = \frac{112}{\cos 16^\circ 30'} = \frac{112}{0,9588197} = 116,810278$

$b = 116,81$ cm

Ovo je 10 stranica kompletno riješenih zadataka
iz naše ZBIRKE POTPUNO RIJEŠENIH ZADATAKA –MATEMATIKA-2- **TRIGONOMETRIJA**
PO ŠKOLSKOJ ZBIRCI od B.Dakića --najnovije izdanje

U toj zbirci su riješeni svi zadaci
iz poglavlja br. **4. Trigonometriaj pravokutnog trokuta**
na 150-stranica A-4 –formata
Dakle to je knjiga od 150 strana A-4 format
Ako trebate sva rješenja iz tog poglavlja možete ih naručiti tj. kupiti kod nas
Cijena te zbirke potpuno riješenih zadataka je 150 kn tj. Kao tri sata instrukcija
Specijalna ponuda za kupnju ove zbirke preko web-stranice ili ovog dokumenta
Vrijedi do daljnjeg i cijena je **75 kn + poštarina**

Kupnjom ove zbirke od nas dobivate i garanciju da su svi zadatci točno riješeni
i ako vam nešto nije jasno i trebate dodatne upute njih uvijek možete dobiti preko maila ili preko telefona.

Ova zbirka je izdana **kao interna skripta zadataka** u okviru programa poduke i dopisne poduke centra za poduku MiM-Sraga i nije u slobodnoj prodaji već se može kupiti isključivo u centru za poduku u okviru specijalnog programa za ubrzanu poduku.

Sve narudžbe možete napraviti na mail: mim-sraga@zg.htnet.hr ili telefon 01-4578-431

na **www.maat-fiiz.com**
potražite kompletno riješene zadatke
iz **MATEMATIKE –2** po školskim zbirkama
- Kompleksni brojevi
- Kvadratna jednadžba
- Polinomi drugog stupnja
- Trigonometrija pravokutnog trokuta

MATEMATIKA –3
po školskim zbirkama
TRIGONOMETRIJA
VEKTORI
KRUŽNICA
ELIPSA
HIPERBOLA
PARABOLA
-

FORMULE trigonometrije za drugi razred srednje škole :

Formule za izračunavanje površine pravokutnog trokuta

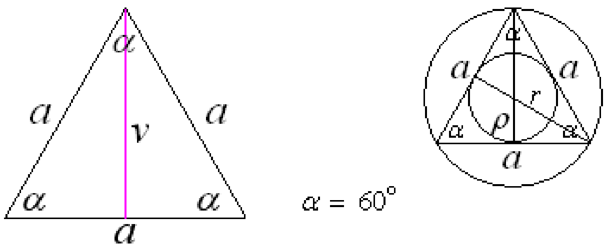
Površina pravokutnog trokuta

$$P_{\triangle} = \frac{a \cdot b}{2} = \frac{c \cdot v}{2} = \frac{a \cdot c \cdot \sin\beta}{2} = \frac{b \cdot c \cdot \sin\alpha}{2}$$

$$P_{\triangle} = \frac{a^2 \cdot \operatorname{tg}\beta}{2} = \frac{b^2 \cdot \operatorname{tg}\alpha}{2} = \frac{c^2 \cdot \sin 2\alpha}{4}$$

Formule za : istostraničan ili jednakostraničan trokut:

Istostraničan trokut



$$\sin\alpha = \frac{v}{a}$$

$$v = a \cdot \sin\alpha$$

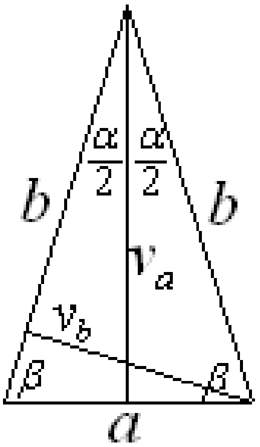
$$a = \frac{v}{\sin\alpha}$$

$$P = \frac{a^2\sqrt{3}}{4} \qquad o = 3 \cdot a$$

$$v^2 = a^2 - \left(\tfrac{a}{2}\right)^2 \qquad v = \frac{a\sqrt{3}}{2}$$

$$\rho = \frac{a\sqrt{3}}{6} \qquad r = \frac{a\sqrt{3}}{3}$$

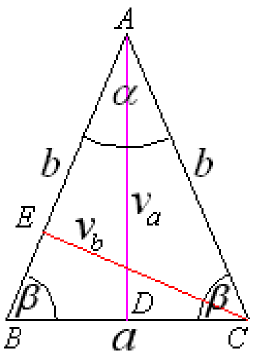
Matematičke formule za drugi razred srednje škole:
Formule za : istostraničan ili jednakokračan trokut:



Jednakokračan trokut

$$P = \frac{a \cdot v_a}{2} \qquad P = \frac{b \cdot v_b}{2} \qquad o = a + 2b$$

$$b^2 = v_a^2 + \left(\frac{a}{2}\right)^2 \qquad \frac{\alpha}{2} + \beta = 90^o$$



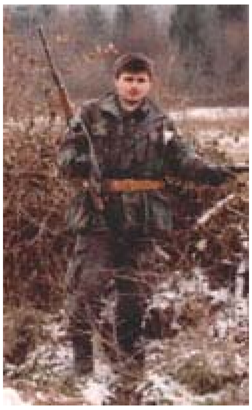
Iz trokuta ADB imamo:

$$\sin \beta = \frac{v_a}{b} \qquad v_a = b \cdot \sin \beta \qquad b = \frac{v_a}{\sin \beta}$$

$$\operatorname{tg} \beta = \frac{2 v_a}{a} \qquad v_a = \frac{a \cdot \operatorname{tg} \beta}{2} \qquad a = \frac{2 v_a}{\operatorname{tg} \beta}$$

$$\sin \frac{\alpha}{2} = \frac{a}{2b} \qquad a = 2 \cdot b \cdot \sin \frac{\alpha}{2} \qquad b = \frac{a}{2 \cdot \sin \frac{\alpha}{2}}$$

$$\operatorname{tg} \frac{\alpha}{2} = \frac{a}{2 v_a} \qquad a = 2 \cdot v_a \cdot \operatorname{tg} \frac{\alpha}{2} \qquad v_a = \frac{a}{2 \cdot \operatorname{tg} \frac{\alpha}{2}}$$



pozdrav svim GARDISTIMA
ma gdje god oni sada bili !