



# Kosinusev poučak



# Primjena kosinusovog poučka



Kada se između točaka poligonske stranice (P5 i P6) nalazi prepreka, tako da se one ne dogledaju, tada razvijemo trokut u kojem ćemo izmjeriti dvije stranice ( $a$  i  $c$ ) i kut koje one zatvaraju ( $\beta$ ).

$$a^2 = b^2 + c^2 - 2bc \cos \alpha$$

$$\cos \alpha = \frac{b^2 + c^2 - a^2}{2bc}$$

$$b^2 = a^2 + c^2 - 2ac \cos \beta$$

$$\cos \beta = \frac{a^2 + c^2 - b^2}{2ac}$$

$$c^2 = a^2 + b^2 - 2ab \cos \gamma$$

$$\cos \gamma = \frac{a^2 + b^2 - c^2}{2ab}$$

# Primjena kosinusovog poučka



Primjer:

$$a = 133.43$$

$$c = 124.25$$

$$\beta = 80^{\circ}32'47''$$

$$b^2 = a^2 + c^2 - 2ac \cos \beta$$

$$\underline{b = 166.72}$$

$$\cos \alpha = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\underline{\alpha = 52^{\circ}08'04''}$$

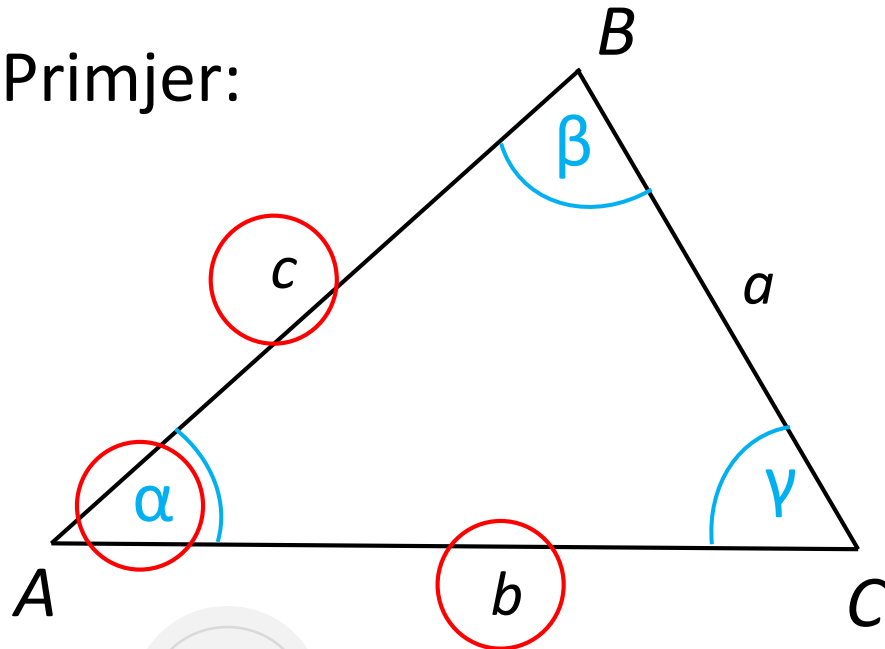
$$\cos \gamma = \frac{a^2 + b^2 - c^2}{2ab}$$

$$\underline{\gamma = 47^{\circ}19'09''}$$

$$\text{Kontrola: } \alpha + \beta + \gamma = 180^{\circ}$$

# Kosinsov poučak

Primjer:



Zadano:

$$b = 147,77$$

$$c = 172,06$$

$$\alpha = 57^{\circ}34'47''$$

$$a^2 = b^2 + c^2 - 2bc \cos \alpha$$

$$a^2 = 147,77^2 + 172,06^2 - 2 \cdot 147,77 \cdot 172,06 \cdot \cos 57^{\circ}34'47''$$

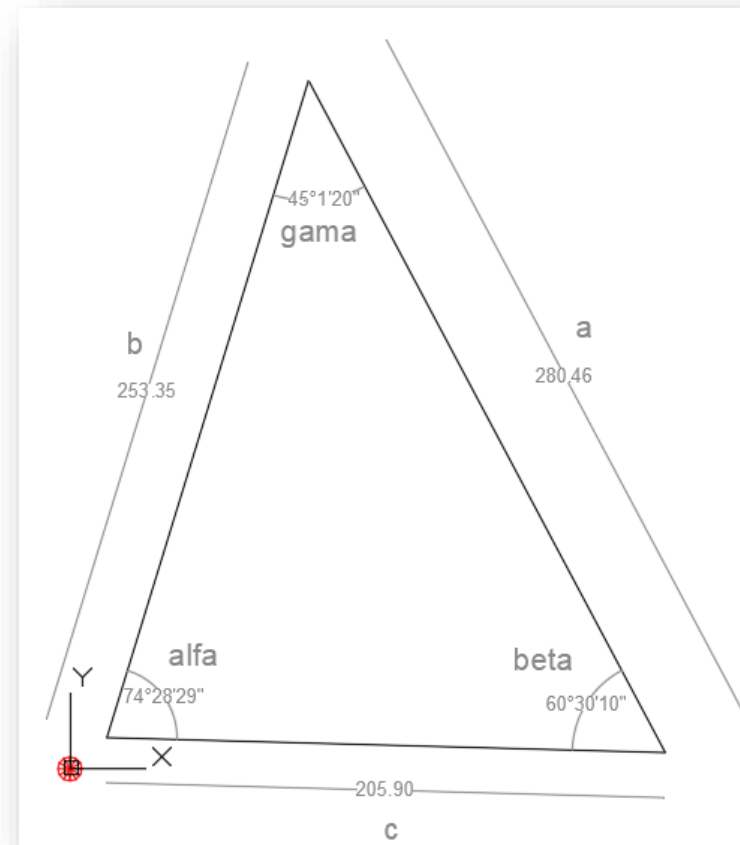
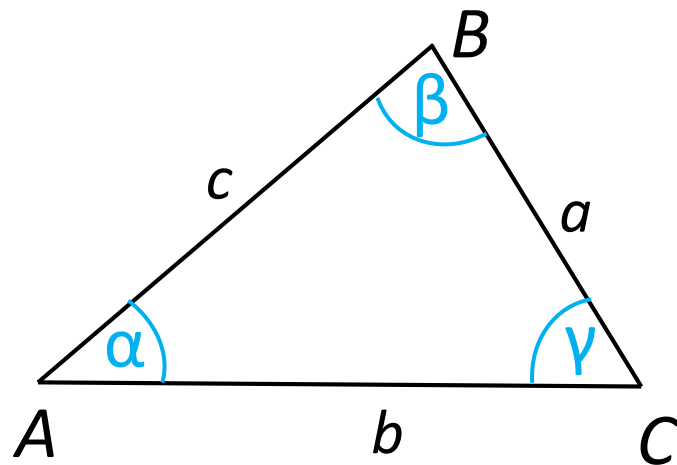
$$a^2 = 21835,97 + 29604,64 - 50850,61 \cdot 0,536126 = 24178,30$$

$$a = \underline{\underline{155,49}}$$





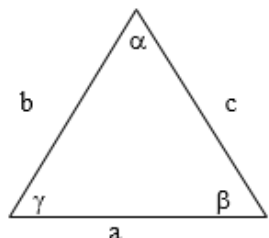
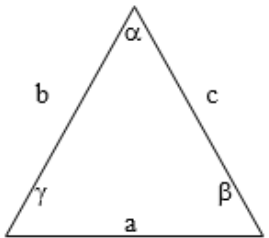
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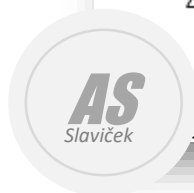


Primjeri:

a	b	c		kut - ° ' ''				b <sup>2</sup>	c <sup>2</sup>	2bc	cos α	=	a <sup>2</sup>	a
	253,35	205,9	α	74	28	29	a <sup>2</sup> =	64186,22	42394,81	104329,53	0,267663	=	78655,83	<b>280,46</b>
								a <sup>2</sup>	c <sup>2</sup>	2ac	cos β		b <sup>2</sup>	<b>b</b>
280,46		205,9	β	60	30	10	b <sup>2</sup> =	78657,81	42394,81	115493,43	0,492381	=	64185,81	<b>253,35</b>
								a <sup>2</sup>	b <sup>2</sup>	2ab	cos γ		c <sup>2</sup>	<b>c</b>
280,46	253,35		γ	45	1	20	c <sup>2</sup> =	78657,81	64186,22	142109,08	0,706832	=	42396,72	<b>205,90</b>

## Računanje trokuta iz dviju mjenjenih duljina stranica i kuta između njih

Skica	Mjerene veličine $\alpha, b, c$					$a^2 = b^2 + c^2 - 2bc \cos \alpha$ $\cos \beta = \frac{a^2 + c^2 - b^2}{2ac}$ $\cos \gamma = \frac{a^2 + b^2 - c^2}{2ab}$		
	Računate veličine $a, \beta, \gamma$ Kontrola $\alpha + \beta + \gamma = 180^\circ$	Kontrola		$a = (b/\sin \beta) \sin \alpha$ $a = (c/\sin \gamma) \sin \alpha$				
AS		°	'	"			ASlaviček	
	$\alpha$	59	28	52	b	220,65	$b^2$	48686,4225
	$\beta$	61	40	44	c	214,49	$c^2$	46005,9601
	$\gamma$	58	50	24			$\cos \alpha$	0,507822392
	$\Sigma$	180	00	00			$2bc \cos \alpha$	48067,64256
							$a^2$	46624,74004
						a	215,93	a
	$\alpha$	52	08	04	b	166,72	$b^2$	27795,5584
	$\beta$	80	32	47	c	124,25	$c^2$	15438,0625
	$\gamma$	47	19	09			$\cos \alpha$	0,613810716
	$\Sigma$	180	00	00			$2bc \cos \alpha$	25430,12887
							$a^2$	17803,49203
						a	133,43	a



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