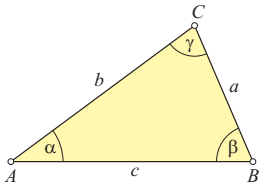
Rješenja zadataka 6.1

Zadatak 1. Izračunaj duljine ostalih dviju stranica i treći kut trokuta ako je:

1) $a = 21$ cm, $\alpha = 66°$, $\beta = 52°$;
2) $a = 7.3$ cm, $\beta = 86°$, $\gamma = 51°$;
3) $b = 13.2$ cm, $\alpha = 21°48'$, $\beta = 123°42'$;
4) $b = 44.5$ cm, $\alpha = 103°28'$, $\gamma = 41°33'$;
5) $c = 10$ cm, $\alpha = 88°$, $\gamma = 12°$;
6) $c = 0.89$ cm, $\alpha = 28°$, $\beta = 34°$.

Rješenje.

1) $a = 21\text{cm}$
$\alpha = 66°$
$\beta = 52°$



$b, c, \gamma = ?$

$$\gamma = 180° - \alpha - \beta = 180° - 66° - 52° = 62°$$

$$b = \frac{a \sin\beta}{\sin\alpha} = \frac{21\text{cm} \cdot \sin 52°}{\sin 66°} = 18.11\text{cm}$$

$$c = \frac{a \sin\gamma}{\sin\alpha} = \frac{21\text{cm} \cdot \sin 62°}{\sin 66°} = 20.3\text{cm}$$

2) $a = 7.3\text{cm}$
$\beta = 86°$
$\gamma = 51°$

$b, c, \alpha = ?$

$$\alpha = 180° - \beta - \gamma = 180° - 86° - 51° = 43°$$

$$b = \frac{a \sin\beta}{\sin\alpha} = \frac{7.3\text{cm} \cdot \sin 86°}{\sin 43°} = 10.68\text{cm}$$

$$c = \frac{a \sin\gamma}{\sin\alpha} = \frac{7.3\text{cm} \cdot \sin 51°}{\sin 43°} = 8.32\text{cm}$$

3) $b = 13.2\text{cm}$
$\alpha = 21°48'$
$\beta = 123°42'$

$a, c, \gamma = ?$
$\gamma = 180° - \alpha - \beta = 180° - 21°48' - 123°42' = 180° - 144°90' = 180° - 145°30'$
$= 179°60' - 145°30' = 34°30'$
$a = \dfrac{b \sin \alpha}{\sin \beta} = \dfrac{13.2\text{cm} \cdot \sin 21°48'}{\sin 123°42'} = 5.89\text{cm}$
$c = \dfrac{a \sin \gamma}{\sin \alpha} = \dfrac{5.89\text{cm} \cdot \sin 21°48'}{\sin 34°30'} = 8.99\text{cm}$

4) $b = 44.5\text{cm}$
$\alpha = 103°28'$
$\gamma = 41°33'$

$a, c, \beta = ?$
$\beta = 180° - \alpha - \gamma = 180° - 103°28' - 41°33' = 34°59'$
$a = \dfrac{b \sin \alpha}{\sin \beta} = \dfrac{44.5\text{cm} \cdot \sin 103°28'}{\sin 34°49'} = 75.48\text{cm}$
$c = \dfrac{a \sin \gamma}{\sin \alpha} = \dfrac{75.48\text{cm} \cdot \sin 41°33'}{\sin 103°28'} = 51.48\text{cm}$

5) $c = 10\text{cm}$
$\alpha = 88°$
$\gamma = 12°$

$a, b, \gamma = ?$
$\beta = 180° - \alpha - \gamma = 180° - 88° - 12° = 80°$
$a = \dfrac{c \sin \alpha}{\sin \gamma} = \dfrac{10\text{cm} \cdot \sin 88°}{\sin 12°} = 48.07\text{cm}$
$b = \dfrac{c \sin \beta}{\sin \gamma} = \dfrac{10\text{cm} \cdot \sin 80°}{\sin 12°} = 47.37\text{cm}$

6) $c = 0.89\text{cm}$

$\alpha = 28^\circ$

$\beta = 34^\circ$

$a, b, \gamma = ?$

$\gamma = 180^\circ - \alpha - \beta = 180^\circ - 28^\circ - 34^\circ = 118^\circ$

$$a = \frac{c \sin \alpha}{\sin \gamma} = \frac{0.89\text{cm} \cdot \sin 28^\circ}{\sin 118^\circ} = 0.47\text{cm}$$

$$b = \frac{c \sin \beta}{\sin \gamma} = \frac{0.89\text{cm} \cdot \sin 34^\circ}{\sin 118^\circ} = 0.56\text{cm}$$