

Zadatak 2. Koliki su kutovi trokuta ako su zadane duljine njegovih stranica:

- 1) $a = 4.4$ cm, $b = 5.8$ cm, $c = 6.2$ cm;
- 2) $a = 29$ cm, $b = 44$ cm, $c = 59$ cm;
- 3) $a = 13.5$ cm, $b = 17.2$ cm, $c = 26.8$ cm.
- 4) $a = 3.75$ cm, $b = 4.17$ cm, $c = 5$ cm.
- 5) $a = 113$ cm, $b = 127$ cm, $c = 144$ cm?

Rješenje.

1)

$$a = 4.4\text{cm}$$

$$b = 5.8\text{cm}$$

$$c = 6.2\text{cm}$$

$$\alpha, \beta, \gamma = ?$$

$$\cos \alpha = \frac{b^2 + c^2 - a^2}{2bc} = 0.73303671 \implies \alpha = 42^\circ 51'$$

$$\cos \beta = \frac{a^2 + c^2 - b^2}{2ac} = 0.44281525 \implies \beta = 63^\circ 43'$$

$$\gamma = 180^\circ - \alpha - \beta = 180^\circ - 42^\circ 51' - 63^\circ 43' = 73^\circ 26'$$

2)

$$a = 29\text{cm}$$

$$b = 44\text{cm}$$

$$c = 59\text{cm}$$

$$\alpha, \beta, \gamma = ?$$

$$\cos \alpha = \frac{b^2 + c^2 - a^2}{2bc} = 0.88135593 \implies \alpha = 28^\circ 12'$$

$$\cos \beta = \frac{a^2 + c^2 - b^2}{2ac} = 0.69725307 \implies \beta = 45^\circ 47'$$

$$\gamma = 180^\circ - \alpha - \beta = 180^\circ - 42^\circ 51' - 63^\circ 43' = 106^\circ 1'$$

3)

$$a = 13.5\text{cm}$$

$$b = 17.2\text{cm}$$

$$c = 26.8\text{cm}$$

$$\alpha, \beta, \gamma = ?$$

$$\cos \alpha = \frac{b^2 + c^2 - a^2}{2bc} = 0.90228 \implies \alpha = 25^\circ 32' 26''$$

$$\cos \beta = \frac{a^2 + c^2 - b^2}{2ac} = 0.8356136 \implies \beta = 33^\circ 19' 13''$$

$$\gamma = 180^\circ - \alpha - \beta = 180^\circ - 25^\circ 32' 26'' - 33^\circ 19' 13'' = 121^\circ 8' 21''$$

4)

$$a = 3.75\text{cm}$$

$$b = 4.17\text{cm}$$

$$c = 5\text{cm}$$

$$\alpha, \beta, \gamma = ?$$

$$\cos \alpha = \frac{b^2 + c^2 - a^2}{2bc} = 0.67929 \implies \alpha = 47^\circ 12' 43''$$

$$\cos \beta = \frac{a^2 + c^2 - b^2}{2ac} = 0.57796 \implies \beta = 54^\circ 41' 33''$$

$$\gamma = 180^\circ - \alpha - \beta = 180^\circ - 47^\circ 12' 43'' - 54^\circ 41' 33'' = 78^\circ 5' 44''$$

5)

$$a = 113\text{cm}$$

$$b = 127\text{cm}$$

$$c = 144\text{cm}$$

 $\alpha, \beta, \gamma = ?$

$$\cos \alpha = \frac{b^2 + c^2 - a^2}{2bc} = 0.658793 \implies \alpha = 48^\circ 47' 31''$$

$$\cos \beta = \frac{a^2 + c^2 - b^2}{2ac} = 0.5339233 \implies \beta = 57^\circ 43' 45''$$

$$\gamma = 180^\circ - \alpha - \beta = 180^\circ - 48^\circ 47' 31'' - 57^\circ 43' 45'' = 73^\circ 28' 44''$$