Zadatak 13. Odredi površinu trokuta $\triangle ABC$ ako je $b + c = 11.5$ cm, $a = 2.5$ cm i $\alpha = 23°$.

Rješenje.

$b + c = 11.5\,\text{cm}$

$a = 2.5\,\text{cm}$

$\alpha = 23°$

$P = ?$

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

$2.5^2 = b^2 + (11.5 - b)^2 - 2b(11.5 - b)\cos 23°$

$6.25 = b^2 + 135.25 - 23b + b^2 - 21.1716b + 1.841b^2$

$3.841b^2 - 44.1716b + 126 = 0$

$$b_{1,2} = \frac{44.1716 \pm \sqrt{44.1716^2 - 4 \cdot 3.841 \cdot 126}}{2 \cdot 3.841} = \frac{44.1716 \pm 3.90720}{7.682}$$

$b_1 = 5.24\,\text{cm} \implies c_1 = 6.26\,\text{cm}$

$b_2 = 6.26\,\text{cm} \implies c_1 = 5.24\,\text{cm}$

$$P = \frac{bc\sin\alpha}{2} = \frac{5.24 \cdot 6.26 \cdot \sin 32°}{2} = 6.41\,\text{cm}^2$$