Zadatak 10. Odredi duljine stranica b i c te kutove trokuta $\triangle ABC$ ako je $P = 142\,cm^2, a = 35.2$ cm, $\alpha + \beta = 98°15'$.

Rješenje.

$$P = 142\,\text{cm}^2$$
$$a = 35.2\,\text{cm}$$
$$b_1 = 18\,\text{cm}$$
$$\alpha + \beta = 98°15'$$

$b,\ c = ?$

$$\gamma = 180° - (\alpha + \beta) = 81°45'$$

$$P = \frac{ab\sin\gamma}{2} \implies b = \frac{2P}{a\sin\gamma} = 8.15\,\text{cm}$$

$$\frac{a}{\sin\alpha} = \frac{b}{\sin\beta} \quad (\beta = 98°15' - \alpha)$$

$$\frac{35.2}{\sin\alpha} = \frac{8.15}{\sin(98°15' - \alpha)}$$

$$35.2 \cdot (\sin 98°15' \cos\alpha - \cos 98°15' \sin\alpha) = 8.15 \cdot \sin\alpha$$

$$34.83573\cos\alpha + 5.05094\sin\alpha - 8.15 \cdot \sin\alpha = 0$$

$$34.83573\cos\alpha - 3.09906 \cdot \sin\alpha = 0 \quad / : \cos\alpha$$

$$34.83573 - 3.09906 \cdot \operatorname{tg}\alpha = 0$$

$$\operatorname{tg}\alpha = 11.24074181$$

$$\alpha = 84°56'$$

$$\beta = 13°19'$$

$$c = \frac{a \cdot \sin\gamma}{\sin\alpha} = 34.97\,\text{cm}.$$