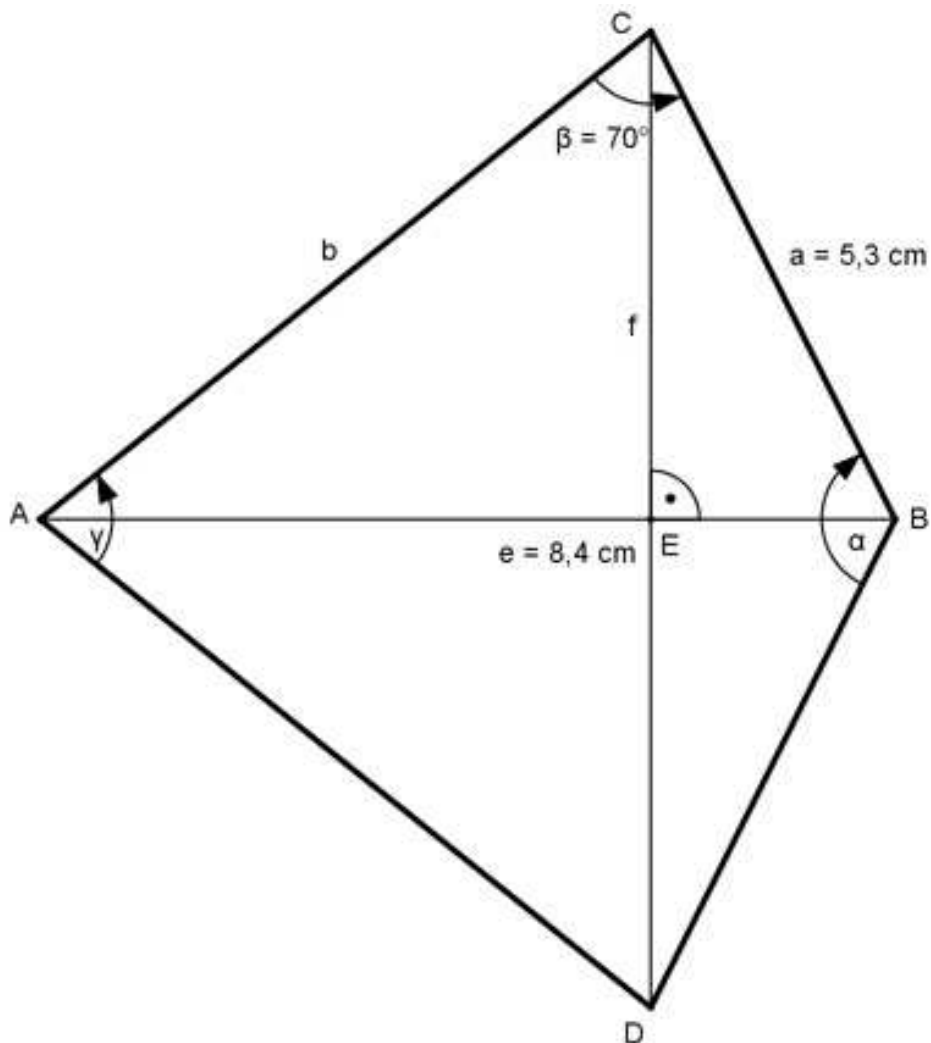


Trigonometrie Aufgabe 161

Wie groß ist die Seite b des Drachenvierecks?



Im Dreieck ABC:

Fall SSW:

Sinussatz:

$$\frac{e}{\sin \beta} = \frac{a}{\sin \gamma/2} \quad | \cdot \sin \gamma/2$$

$$\frac{e \cdot \sin \gamma/2}{\sin \beta} = a \quad | \cdot \sin \beta$$

$$e \cdot \sin \gamma/2 = a \cdot \sin \beta \quad | :e$$

$$\sin \gamma/2 = \frac{a * \sin \beta}{e} = \frac{5,3 \text{ cm} * \sin 70^\circ}{8,4 \text{ cm}} = \frac{5,3 \text{ cm} * 0,9397}{8,4 \text{ cm}} = 0,5929$$

$$\gamma/2 = 36,4^\circ$$

$$\gamma = 72,8^\circ$$

$$\alpha = 360^\circ - 2 * \beta - \gamma = 360^\circ - 140^\circ - 72,8^\circ = 147,2^\circ$$

Im Dreieck EBC:

$$\sin \alpha/2 = \frac{f/2}{a} \quad | *a$$

$$a * \sin \alpha/2 = f/2 \quad | *2$$

$$f = 2 * a * \sin \alpha/2 = 2 * 5,3 \text{ cm} * \sin 73,6^\circ = 2 * 5,3 \text{ cm} * 0,9593 = 10,2 \text{ cm}$$

Im Dreieck AEC:

$$\sin \gamma/2 = \frac{f/2}{b} \quad | *b$$

$$b * \sin \gamma/2 = f/2 \quad | : \sin \gamma/2$$

$$b = \frac{f}{2 * \sin \gamma/2} = \frac{10,2 \text{ cm}}{2 * \sin 36,4^\circ} = \frac{10,2 \text{ cm}}{2 * 0,5934} = \mathbf{8,6 \text{ cm}}$$