

**Zadatak 29.** Ako je  $a = 10$  cm,  $b + c = 15$  cm te  $r = 1$  cm, kolike su duljine stranica  $b$  i  $c$  trokuta  $\triangle ABC$ ?

**Rješenje.**

$$a = 10 \text{ cm}$$

$$b + c = 15 \text{ cm}$$

$$r = \rho = 1 \text{ cm}$$

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$$b, c = ?$$

$$P = s \cdot r = \frac{a + b + c}{2} \cdot r = \frac{10 + 15}{2} \cdot 1 = 12.5 \text{ cm}^2.$$

$$P = \frac{a \cdot v_a}{2} \implies v_a = \frac{2P}{a} = 2.5 \text{ cm}$$

$$b + c = 15 \implies c = 15 - b$$

$$a = a_1 + a_2$$

$$a = \sqrt{c^2 - v_a^2} + \sqrt{b^2 - v_a^2}$$

$$a = \sqrt{(15 - b)^2 - v_a^2} + \sqrt{b^2 - v_a^2}$$

$$10 = \sqrt{(15 - b)^2 - 6.25} + \sqrt{b^2 - 6.25}$$

$$10 = \sqrt{225 - 30b + b^2 - 6.25} + \sqrt{b^2 - 6.25}$$

$$10 - \sqrt{b^2 - 6.25} = \sqrt{225 - 30b + b^2 - 6.25} \quad /^2$$

$$100 - 20\sqrt{b^2 - 6.25} + b^2 - 6.25 = 225 - 30b + b^2 - 6.25$$

$$-125 + 30b = 20\sqrt{b^2 - 6.25} \quad / : 5$$

$$-25 + 6b = 4\sqrt{b^2 - 6.25} \quad /^2$$

$$625 - 600b + 36b^2 = 16b^2 - 100$$

$$20b^2 - 600b + 525 = 0 \quad / : 5$$

$$4b^2 - 120b + 105 = 0$$

$$b_{1,2} = \frac{120 \pm 88.99}{8} \implies b_1 = 26.12, \quad b_2 = 3.87$$

$$b_1 \text{ (nije rješenje zbog } b + c = 15) \implies b = 3.87 \text{ cm}$$

$$c = 15 \text{ cm} - b = 11.12 \text{ cm.}$$

