

**Zadatak 7.** Točke  $A(0, 2)$ ,  $B(4, -2)$ ,  $C(5, 5)$  vrhovi su trokuta  $\triangle ABC$ . U kojem omjeru sjecište simetrale unutarnjeg kuta pri vrhu  $B$  trokuta siječe suprotnu stranicu? Odredi koordinate sjecišta.

*Rješenje.*

$$A(0, 2)$$

$$B(4, -2)$$

$$C(5, 5)$$

$$|\overline{AB}| = \sqrt{(x_B - x_A)^2 + (y_B - y_A)^2} = \sqrt{(4 - 0)^2 + (-2 - 2)^2} = \sqrt{16 + 16} = 4\sqrt{2}$$

$$|\overline{AC}| = \sqrt{(x_C - x_A)^2 + (y_C - y_A)^2} = \sqrt{(5 - 0)^2 + (5 - 2)^2} = \sqrt{25 + 9} = \sqrt{34}$$

$$|\overline{BC}| = \sqrt{(x_C - x_B)^2 + (y_C - y_B)^2} = \sqrt{(5 - 4)^2 + (5 + 2)^2} = \sqrt{1 + 49} = 5\sqrt{2}$$

$$\frac{|\overline{AD}|}{|\overline{DC}|} = \frac{|\overline{AB}|}{|\overline{BC}|} = \frac{4\sqrt{2}}{5\sqrt{2}} = \frac{4}{5} = \lambda$$

$$x_D = \frac{x_A + \lambda x_C}{1 + \lambda} = \frac{0 + \frac{4}{5} \cdot 5}{1 + \frac{4}{5}} = \frac{4}{\frac{9}{5}} = \frac{20}{9}$$

$$y_D = \frac{y_A + \lambda y_C}{1 + \lambda} = \frac{2 + \frac{4}{5} \cdot 5}{1 + \frac{4}{5}} = \frac{6}{\frac{9}{5}} = \frac{10}{3}$$

$$D\left(\frac{20}{9}, \frac{10}{3}\right)$$