XVI математическо състезание „Вергил Крумов”
17.11.2012 година, Силистра

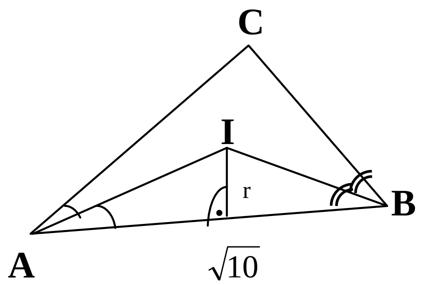
XI клас

<u>Отговори:</u>

Зад.1	Зад.2	Зад.3	Зад.4	Зад.5	Зад.6	Зад.7	Зад.8	Зад.9	Зад.10
В	**Г**	**Б**	**А**	**Г**	**Б**	**Б**	**Г**	**Б**	**Б**

Зад.11	Зад.12	Зад.13	Зад.14
A > 0	$\frac{1}{18}$	$5\left(\sqrt{6}+\sqrt{2}\right)$	$\lvert a\rvert \geq 2$

<u>Решение на Задача 15:</u>



От cosT за ΔABI

$\cos\angle AIB = \dfrac{2+2-10}{2.2.\sqrt{2}} = -\dfrac{\sqrt{2}}{2}$ **/2т/**

$\Rightarrow \angle AIB = 135^\circ \Rightarrow \angle ACB = 90^\circ$ **/1т/**

$\left(\angle AIB = 90^\circ + \dfrac{\angle ACB}{2}\right)$

$$\left.\begin{aligned} S_{ABI} &= \frac{1}{2}AI.BI.\sin 135^\circ = 1 \\ S_{ABI} &= \frac{1}{2}AB.r = \frac{1}{2}\sqrt{10}r \end{aligned}\right\} \Rightarrow r = \frac{\sqrt{10}}{5}$$ **/3т/**

От ΔABC - правоъгълен $\Rightarrow r = p - AB$

$\Rightarrow AC + BC = 2r + AB = \dfrac{2.\sqrt{10}}{5} + \sqrt{10} = \dfrac{7\sqrt{10}}{5}$ **/2т/**

$\Rightarrow S_{ABC} = p.r = \dfrac{1}{2}\left(\dfrac{7\sqrt{10}}{5} + \sqrt{10}\right).\dfrac{\sqrt{10}}{5} = 2{,}4$ ед^2 (квадратни единици) **/1т/**