

CONCURSUL INTERJUDEȚEAN „MICUL ARHIMEDE”

Ediția a X-a - decembrie 2011

Clasa a VII-a

BAREM DE CORECTARE

of: 10p

Partea I 10 x 5p = 50p

NR. ITEM	RASPUNS CORECT
1	C
2	D
3	B
4	E
5	B
6	B
7	D
8	C
9	C
10	A

II. 11(a) $x+y \neq 0; x+z \neq 0; x+y \neq 0$ ----- 3p
 Pres. $x=0 \Rightarrow \frac{y}{y+z} + \frac{z}{z} = 1 \Rightarrow$ ----- 3p
 $\Rightarrow \frac{y}{y+z} = 0 \Rightarrow y=0$ absurd ----- 3p

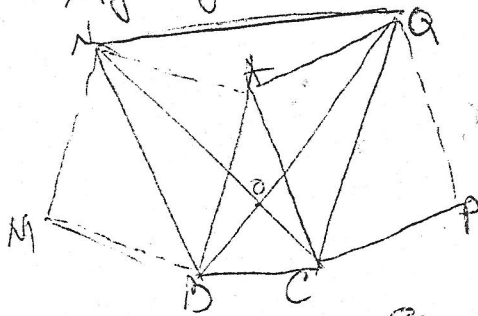
$\Rightarrow \frac{y}{y+z} = 0 \Rightarrow y=0$ ----- 4p

6) $\frac{y}{x+y} = \frac{x+y-x}{x+y} = 1 - \frac{x}{x+y}$ ----- 4p

La fel $\Rightarrow \frac{z}{y+z} = 1 - \frac{y}{y+z}$ și $\frac{x}{z+x} = 1 - \frac{z}{z+x}$ ----- 3p

$\Rightarrow \frac{y}{x+y} + \frac{z}{y+z} + \frac{x}{z+x} = 3 - \left(\frac{x}{x+y} + \frac{y}{y+z} + \frac{z}{z+x} \right) = 3 - 1 = 2$ ----- 3p

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figuri ----- 1p
 Notăm $m(\widehat{BAC}) = \alpha \Rightarrow$ ----- 1p
 $m(\widehat{ABC}) = \frac{180-x}{2}$ ----- 1p
 ΔBAC isoscel ----- 1p
 $m(\widehat{BAQ}) = 90 + \alpha$ ----- 1p
 $m(\widehat{ABQ}) = \frac{180 - (90+x)}{2} = \frac{90-x}{2}$ ----- 2p

$m(\widehat{QBC}) = \frac{180-x}{2} - \frac{90-x}{2} = \frac{180-x-90+x}{2} = 45^\circ$ ----- 2p

$m(\widehat{NAQ}) = 180 - \alpha$ ----- 2p
 ΔNQA isoscel ($AN=AQ$) $\Rightarrow m(\widehat{AQA}) = \frac{180 - (180-x)}{2} = \frac{x}{2}$ ----- 2p

$m(\widehat{NAQ}) = m(\widehat{AQN}) + m(\widehat{NAQ}) = \frac{x}{2} + \frac{90-x}{2} = 45^\circ$ ----- 2p
 $\Rightarrow m(\widehat{NAQ}) = m(\widehat{QBC}) = 45^\circ \Rightarrow NA \parallel BC \Rightarrow BCAN$ trap. ----- 2p

$\Delta ANB \cong \Delta AQC \Rightarrow NB=QC \Rightarrow BCAN$ trapez ----- 1p

$OB=OC$ și $m(\widehat{OBC}) = 45^\circ \Rightarrow m(\widehat{BOC}) = 90^\circ$ ----- 2p