



Avizat Inspector General,  
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Nr ISMB:

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## CONCURSUL DE MATEMATICĂ "DAN BARBILIAN"

București 2022-2023

Barem cls a IX-a  
 Varianta 1

Oficiu: 10p

II. 50p

1	2	3	4	5	6	7	8	9	10
b	a	d	b	c	d	b	a	a	b
5p	5p	5p	5p	5p	5p	5p	5p	5p	5p

II. 40p

1a	$f(1) = 1^2 - 8 \cdot 1 + 7 = 1 - 8 + 7 = 0$	5p
	$\Rightarrow f(1) \cdot \underbrace{[f(2) \cdot \dots \cdot f(2023)]}_{f(x)} = 0 \cdot f(x) = 0$	5p
1b	$D = (-8)^2 - 4 \cdot 1 \cdot 7 = 64 - 28 = 36 \Rightarrow \sqrt{D} = 6$	4p
	$x_1 = \frac{8+6}{2 \cdot 1} = 7$	2p
	$x_2 = \frac{8-6}{2 \cdot 1} = 1$	2p
	$ x_2 - x_1  =  1 - 7  =  -6  = 6$	2p
2	$(g \circ f)(x) = g(f(x)) = g(3x - 7)$	3p
	$= 2(3x - 7) + 1$	2p
	$= 6x - 13 \Rightarrow 6x - 13 = 5 \Rightarrow 6x = 18$	3p
	$x = 3$	2p
3	$\vec{OG} = \frac{\vec{OA} + \vec{OB} + \vec{OC}}{3}$	2p
	$\vec{OG} = \frac{2m\vec{i} + (m+2)\vec{j} + 2\vec{i} + 2n\vec{j} + (m+1)\vec{i} + (n-1)\vec{j}}{3}$	2p
	$\Rightarrow \frac{2m+2+m+1}{3} = 0; \quad 3m+3=0 \Rightarrow m=-1$	3p
	$\frac{m+2+2n+n-1}{3} = 0 \Rightarrow \frac{n}{3} = 0 \Rightarrow n=0$	3p

Director,  
 Prof. Machidon Gabriela