

BAREM DE EVALUARE ȘI DE NOTARE

Varianta 148

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SUBIECTUL I		(30 de puncte)
1.	0	5p
2.	0	5p
3.	$4 \cdot x-3 \cdot x+3 + 2 x-3 = 0 \Rightarrow 2 x-3 (2 x+3 +1) = 0 \Rightarrow x-3 = 0 \Rightarrow x = 3$ Sau $2 x+3 +1 = 0 \Rightarrow x+3 = -\frac{1}{2}$ (nu are solutii; stim ca $ x \geq 0, \forall x \in \mathbb{R}$) Deci $A = \{3\}; x-1 \leq 2 \Leftrightarrow -2 \leq x-1 \leq 2 \Leftrightarrow -1 \leq x \leq 3 \Leftrightarrow B = [-1; 3]$ $A \cap B = \{3\}$	5p
4.	$\frac{1}{a} + \frac{1}{b} = \sqrt{5} \notin \left(\frac{4}{5}; \frac{6}{5}\right)$	5p
5.	$4\sqrt{6}$	5p
6.	Februarie	5p
SUBIECTUL II		(30 de puncte)
1.	$\frac{x}{14} = \frac{y}{12} = \frac{z}{26} = \frac{180}{52} \Rightarrow z = 90^\circ$	5p
2.	$M \in G_f \Leftrightarrow f(a) = b \Leftrightarrow 2a - 1 = b(1)$ $M \in G_g \Leftrightarrow g(a) = b \Leftrightarrow a - 3 = b(2)$ Din (1) si (2) $\Rightarrow a = -2; b = -5$	5p
3.	Notam $x = \text{masura unui unghi} \Rightarrow 5x = \text{masura unghiului mai mare} \Rightarrow x + 5x + 72 = 180 \Rightarrow x = 18^\circ \Rightarrow 5x = 90^\circ$	5p
4.	$\text{a) } E(x) \text{ are sens daca: } \begin{cases} 2x^2 + x - 1 \neq 0 \\ 2x^2 - x - 1 \neq 0 \\ 2x^2 + 1 \neq 0 \end{cases}$ $\text{Consideram } 2x^2 + x - 1 = 0 \Leftrightarrow x^2 + x + x^2 - 1 = 0 \Leftrightarrow x(x+1) + (x+1)(x-1) = 0 \Leftrightarrow (x+1)(2x-1) = 0 \Leftrightarrow x = -1 \text{ sau } x = \frac{1}{2};$ $\text{Analog, consideram } 2x^2 - x - 1 = 0 \Leftrightarrow x = 1 \text{ sau } x = -\frac{1}{2}$ $2x^2 + 1 \neq 0, \forall x \in \mathbb{R} \text{ (deoarece } 2x^2 \geq 0, \forall x \in \mathbb{R} \text{ si } 2x^2 + 1 > 0, \forall x \in \mathbb{R})$	5p

	Deci $x \in \mathbb{R} \setminus \left\{ \pm 1; \pm \frac{1}{2} \right\}$	
	$E(x) = \left(\frac{(2x-1)^2}{(x+1)(2x-1)} + \frac{(2x+1)^2}{(x-1)(2x+1)} \right) \cdot \frac{x-1}{2x^2+1} = \left(\frac{(2x-1)}{(x+1)} + \frac{(2x+1)}{(x-1)} \right) \cdot \frac{x-1}{2x^2+1} =$ <p>b)</p> $= \left(\frac{4x^2+2}{(x+1)(x-1)} \right) \cdot \frac{x-1}{2x^2+1} = \left(\frac{2(2x^2+1)}{(x+1)(x-1)} \right) \cdot \frac{x-1}{2x^2+1} = \frac{2}{x+1}$	5p
5	<p>Not. a; a+1; a+2 laturile paralelipipedului $\Rightarrow \sqrt{a^2 + (a+1)^2 + (a+2)^2} = 5\sqrt{2} \Rightarrow$ $a^2 + a^2 + 2a + 1 + a^2 + 4a + 4 = 50 \Rightarrow a^2 + 2a - 15 = 0 \Rightarrow a_1 = -5$ nu convine); $a_2 = 3 \Rightarrow 3; 4; 5$ sunt lungimile muchiilor $\Rightarrow V = 60 \text{ cm}^3$</p>	5p
SUBIECTUL III		(30 de puncte)
1.	<p>a) $\text{pr}_{(ABC)} SB = AB \Rightarrow \sphericalangle(SB; (ABC)) = \sphericalangle SBA$ In $\triangle ABD$ ($AB \equiv AD = \text{lat. romb}$; $m(\sphericalangle A) = 60^\circ$) $\Rightarrow m(\sphericalangle ABD) = m(\sphericalangle ADB) = 60^\circ \Rightarrow$ $\triangle ABC$ echilateral $\Rightarrow AB = AD = BC = DC = 14 \text{ cm}$ In $\triangle SAB$ ($m(\sphericalangle A) = 90^\circ$) $\Rightarrow$ cf. teor. Pitagora: $SB = 14\sqrt{2} \text{ cm}$</p>	5p
	<p>b) Not. $BD \cap AC = \{O\}$; calculam diagonala AC astfel: in $\triangle AOB$ ($m(\sphericalangle O) = 90^\circ$) $\Rightarrow$ $AO = 7\sqrt{3} \Rightarrow AC = 2AO = 14\sqrt{3} \text{ cm}$; In $\triangle SAC$ ($m(\sphericalangle O) = 90^\circ$) $\Rightarrow SC = 28 \text{ cm} \Rightarrow \sin(\sphericalangle ACS) = \frac{SA}{SC} = \frac{14}{28} = \frac{1}{2} \Rightarrow$ $m(\sphericalangle ACS) = 30^\circ$</p>	5p
	c) $P_{\triangle SBC} = 14(3 + \sqrt{2})$	5p
2.	<p>a) $V = \frac{h}{3}(S + s + \sqrt{Ss})$; $S = 50 \cdot 5 = 250 \text{ m}^2$; $s = 10 \text{ m}^2 \Rightarrow$ $V = \frac{2,4}{3}(250 + 10 + \sqrt{250 \cdot 10}) = 0,8(250 + 10 + 50) = 248 \text{ m}^3$</p>	5p
	b) $248 : 0,5 = 496$ roabe	5p
	c) $248 : 4 = 62$ transporturi de camion	5p