

BAREM DE EVALUARE ȘI DE NOTARE

Varianta 75

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SUBIECTUL I		(30 de puncte)
1.	$1054 + 1054 : 2 = 1054 + 527 = 1581$	5p
2.	$-2 \leq x - 1 < 3 \Rightarrow -1 \leq x < 4 \Rightarrow A = [-1; 4)$	5p
3.	$x = \text{preț caiet}; y = \text{preț creion}$ $x + 3y = 12 \Rightarrow 3x + 9y = 3(x + 3y) = 3 \cdot 12 = 36$	5p
4.	6 cm	5p
5.	$A'C' \parallel AC \Rightarrow m(\sphericalangle(A'C', BD)) = m(\sphericalangle(AC, BD)) = m(\sphericalangle AOD) = 90^\circ$	5p
6.	$t_m = \frac{-2 + 0 + 3 + (-2) + 4 + 5 + (-1)}{7} = \frac{7}{7} = 1$	5p
SUBIECTUL II		(30 de puncte)
1.	Desen piramidă Apotemă Înălțime	3p 1p 1p
2.	$x = \text{preț castraveți}, y = \text{preț morcov}$ $2x + 3y = 12$ $4x + 2y = 16 : 2 \Rightarrow 2x + y = 8 \Rightarrow 2x = 8 - y$ $2x + 3y = 12 \Rightarrow 8 - y + 3y = 12 \Rightarrow 2y = 4$ $y = 2$ $x = 3$	1p 1p 1p 1p 1p
3.	$(x, y, z) \text{ d.p. } (4, 6, 7) \text{ și } x + y + z = 170$	1p

	$\frac{x}{4} = \frac{y}{6} = \frac{z}{7} = \frac{x+y+z}{4+6+7} = \frac{170}{17} = 10$ $\frac{x}{4} = 10 \Rightarrow x = 40$ $\frac{y}{6} = 10 \Rightarrow y = 60$ $\frac{z}{7} = 10 \Rightarrow z = 70$	<p>1p</p> <p>1p</p> <p>1p</p> <p>1p</p>
4.	$E(x) = \left(\frac{2}{x-1} - \frac{3}{x+1} + \frac{x}{x^2-1} \right) : \frac{5}{x^2-2x+1} = \left(\frac{2x+2}{x^2-1} - \frac{3x-3}{x^2-1} + \frac{x}{x^2-1} \right) \cdot \frac{(x-1)}{5}$ <p>a)</p> $= \frac{2x+2-3x+3+x}{x^2-1} \cdot \frac{(x-1)^2}{5} = \frac{5}{(x+1)(x-1)} \cdot \frac{(x-1)^2}{5} = \frac{x-1}{x+1}$	<p>3p</p> <p>2p</p>
	<p>b) $E(x) \in \mathbb{Z} \Leftrightarrow \frac{x-1}{x+1} \in \mathbb{Z} \Leftrightarrow \frac{x+1-2}{x+1} \in \mathbb{Z} \Leftrightarrow 1 - \frac{2}{x+1} \in \mathbb{Z}$</p> $\left. \begin{array}{l} 1 - \frac{2}{x+1} \in \mathbb{Z} \\ 1 \in \mathbb{Z} \end{array} \right\} \Rightarrow \frac{2}{x+1} \in \mathbb{Z} \Rightarrow x+1 \in D_2 \Rightarrow x+1 \in \{-2; -1; 1; 2\}$ $x \in \{-3; -2; 0; 1\}$	<p>2p</p> <p>2p</p> <p>1p</p>
5	$\left. \begin{array}{l} \sqrt{x^2-4x+3} + y^2+10y+21 \leq 0 \\ \sqrt{x^2-4x+3} \geq 0 \\ y^2+10y+21 \geq 0 \end{array} \right\} \Rightarrow \begin{cases} \sqrt{x^2-4x+3} = 0 \\ y^2+10y+21 = 0 \end{cases}$ $\sqrt{x^2-4x+3} = 0 \Rightarrow x^2-4x+3=0 \Rightarrow (x-2)^2-1=0 \Rightarrow (x-2)^2=1 \Rightarrow$ $x-2 = \pm 1 \Rightarrow \begin{cases} x=3 \\ x=1 \end{cases}$ $ y^2+10y+21 = 0 \Rightarrow y^2+10y+21=0 \Rightarrow (y+5)^2-4=0 \Rightarrow (y+5)^2=4 \Rightarrow$ $y+5 = \pm 2 \Rightarrow \begin{cases} y=-3 \\ y=-7 \end{cases}$	<p>2p</p> <p>1p</p> <p>1p</p>

	$S = \{(3; -3); (3; -7); (1; -3); (1; -7)\}$	1p
SUBIECTUL III		(30 de puncte)
1.	<p>a) $\triangle ADC$ dreptunghic isoscel $\Rightarrow m(\sphericalangle DAC) = m(\sphericalangle DCA) = 45^\circ$ $m(\sphericalangle A) = 90^\circ$ $\left. \vphantom{\begin{array}{l} m(\sphericalangle DAC) = m(\sphericalangle DCA) = 45^\circ \\ m(\sphericalangle A) = 90^\circ \end{array}} \right\} \Rightarrow m(\sphericalangle CAB) = 45^\circ$</p> <p>$m(\sphericalangle CAB) = 45^\circ$ $\triangle ACB$ isoscel $\left. \vphantom{m(\sphericalangle CAB) = 45^\circ} \right\} \Rightarrow m(\sphericalangle CBA) = 45^\circ \Rightarrow$</p> <p>$\triangle ACB$ dreptunghic $\Rightarrow AC = BC = \frac{AB}{\sqrt{2}} = 5\sqrt{2}m$</p> <p>$\triangle ADC$ dreptunghic isoscel $\Rightarrow AD = DC = \frac{AC}{\sqrt{2}} = 5m$</p> <p>$A_{ABCD} = \frac{(AB + DC) \cdot AD}{2} = \frac{(5 + 10) \cdot 5}{2} = 37,5m^2$</p>	2p <

	Suma totală = x + y = 3000 lei	1p
2.	<p>a) Fie $NP \cap B'C' = \{Q\}$</p> $\left. \begin{array}{l} \triangle NB'C' \text{ echilateral} \\ NP \perp B'C' \end{array} \right\} \Rightarrow NQ = \frac{B'C' \sqrt{3}}{2} = 2\sqrt{3} = 3,4$ <p>$BB' = NP - NQ = 8,4 - 3,4 = 5 \text{ m}$</p> <p>Suprafața văruiată = $2 \cdot A_l = 2(Ll + Lh + lh) = 148 \text{ m}^2$.</p> <p>Cantitate var = 148 kg.</p>	5p
	<p>b) Suprafața țiglă = $2 \cdot A_{MNA'B'} = 2A'B' \cdot A'M = 2 \cdot 6 \cdot 4 = 48 \text{ m}^2$</p> <p>preț țiglă = $48 \cdot 56 \text{ lei} = 2688 \text{ lei}$</p>	5p
	<p>c) $pr_{(ABC)} D'P = DP \Rightarrow m(\sphericalangle D'P, (ABC)) = m(\sphericalangle D'PD)$</p> $D'D \perp (ABC) \Rightarrow D'D \perp DP \xrightarrow{TP} D'P^2 = DP^2 + D'D^2 = DC^2 + PC^2 + D'D^2 \Rightarrow$ $D'P^2 = 6^2 + 2^2 + 5^2 = 65 \Rightarrow D'P = \sqrt{65}$ $\sin(\sphericalangle D'PD) = \frac{DD'}{D'P} = \frac{5}{\sqrt{65}} = \frac{\sqrt{65}}{13}$	<p>1p</p> <p>2p</p> <p>2p</p>