

Simulare județeană - Examenul național de bacalaureat, februarie 2026

Proba E.c)

Matematică *M_pedagogic*

Barem de evaluare și de notare

Varianta 2

Filiera vocațională, profilul pedagogic, specializarea învățător-educatoare

SUBIECTUL I

(30 puncte)

5p	1. $\left[-3 + \left(-\frac{1}{2}\right)^2\right] : \left(-\frac{11}{2}\right) = \left[-3 + \frac{1}{4}\right] : \left(-\frac{11}{2}\right) = \left(-\frac{11}{4}\right) : \left(-\frac{11}{2}\right) = \left(-\frac{11}{4}\right) \cdot \left(-\frac{2}{11}\right) = \frac{1}{2}$	3p 2p
5p	2. $f(x)=0 \Leftrightarrow -\frac{3}{5}x + \frac{4}{5} = 0 \Leftrightarrow -3x + 4 = 0$ $-3x = 4 \Rightarrow x = -\frac{4}{3}$ și $y = 0$.	3p 2p
5p	3. $3^{x^2-3x} = 3^{2(x-2)} \Leftrightarrow x^2 - 3x = 2x - 4 \Leftrightarrow x^2 - 5x + 4 = 0$ $\Delta = 9 \Rightarrow x \in \{1; 4\}$.	3p 2p
5p	4. $x + \frac{x}{10} = 297$, unde x este prețul înainte de scumpire. $10x + x = 2970 \Rightarrow 11x = 2970 \Rightarrow x = 270$ lei.	2p 3p
5p	5. M mijloc $BC \Rightarrow M(2; -2)$ N mijloc mediana $AM \Rightarrow N(2; 1)$.	3p 2p
5p	6. ΔABC dreptunghic $\Rightarrow \operatorname{tg} B = \frac{AC}{AB} \Rightarrow \frac{9}{AB} = \frac{3}{4} \Rightarrow AB = 12$ $BC^2 = AB^2 + AC^2 \Rightarrow BC = 15 \Rightarrow P = 36$.	2p 3p

SUBIECTUL al II-lea

(30 puncte)

5p	1. $2026 * (-1) = 2026 \cdot (-1) + 2026 + (-1) = -2026 + 2026 - 1 = -1$	3p 2p
5p	2. $x * y = y * x, \forall x, y \in \mathbf{R}$. $x * y = xy + x + y = yx + y + x = y * x, \forall x, y \in \mathbf{R}$.	2p 3p
5p	3. $\begin{cases} x * 0 = x; & x * 0 = x \cdot 0 + x + 0 = x, \forall x \in \mathbf{R} \\ 0 * x = x \\ 0 * x = 0 \cdot x + 0 + x = x, \forall x \in \mathbf{R} \Rightarrow e = 0. \end{cases}$	3p 2p
5p	4. $x * x = x \cdot x + x + x = x \Rightarrow x^2 + x = 0$ $x(x + 1) = 0 \Rightarrow x \in \{0; -1\}$.	3p 2p
5p	5. $x * x = x^2 + 2x \Rightarrow x * x * x * x = (x^2 + 2x) * (x^2 + 2x) = (x^2 + 2x)^2 + 2(x^2 + 2x) = 0$ $(x^2 + 2x)(x^2 + 2x + 2) = 0 \Rightarrow \begin{cases} x^2 + 2x = 0 \Rightarrow x \in \{0; -2\} \\ x^2 + 2x + 2 = 0 \Rightarrow x \in \emptyset \end{cases}$	2p 3p
5p	6. $x(x + 1) + x + x + 1 \geq x$ $x^2 + x + 2x + 1 - x \geq 0 \Rightarrow x^2 + 2x + 1 \geq 0 \Rightarrow (x + 1)^2 \geq 0, \forall x \in \mathbf{R}$.	2p 3p

SUBIECTUL al III-lea

(30 puncte)

5p	1. $A(0) = \begin{pmatrix} 0 & 2 \\ 1 & 1 \end{pmatrix} \Rightarrow \det A(0) = \begin{vmatrix} 0 & 2 \\ 1 & 1 \end{vmatrix} = 0 \cdot 1 - 2 \cdot 1 = 0 - 2 = -2$	3p 2p
5p	2. $\det A(a) = \begin{vmatrix} a & 2 \\ 1 & a+1 \end{vmatrix} = a(a+1) - 2 \cdot 1 = a^2 + a - 2$ $a^2 + a - 2 = 0 \Rightarrow a \in \{1; -2\}$.	3p 2p
5p	3. $A(a) - I_2 = \begin{pmatrix} a & 2 \\ 1 & a+1 \end{pmatrix} - \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} = \begin{pmatrix} a-1 & 2 \\ 1 & a \end{pmatrix} \Rightarrow$ $\det(A(a) - I_2) = \begin{vmatrix} a-1 & 2 \\ 1 & a \end{vmatrix} = a(a-1) - 2$ $a^2 - a - 2 < 0 \Rightarrow a \in (-1; 2)$	3p 2p
5p	4. $(2a+1)\begin{pmatrix} a & 2 \\ 1 & a+1 \end{pmatrix} - \begin{pmatrix} a & 2 \\ 1 & a+1 \end{pmatrix} \begin{pmatrix} a & 2 \\ 1 & a+1 \end{pmatrix} = \begin{pmatrix} 2a^2+a & 4a+2 \\ 2a+1 & 2a^2+3a+1 \end{pmatrix} -$ $\begin{pmatrix} a^2+2 & 4a+2 \\ 2a+1 & a^2+2a+3 \end{pmatrix} =$ $= \begin{pmatrix} a^2+a-2 & 0 \\ 0 & a^2+a-2 \end{pmatrix} = (a^2+a-2) \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} = (a^2+a-2)I_2$.	3p 2p

5p	$\det A(2) = \begin{vmatrix} 2 & 2 \\ 1 & 3 \end{vmatrix} = 6 - 2 = 4 \neq 0; \quad {}^t A(2) = \begin{pmatrix} 2 & 1 \\ 2 & 3 \end{pmatrix}$ $A^*(2) = \begin{pmatrix} 3 & -2 \\ -1 & 2 \end{pmatrix} \Rightarrow A^{-1}(2) = \frac{1}{\det A(2)} \begin{pmatrix} 3 & -2 \\ -1 & 2 \end{pmatrix} = \begin{pmatrix} \frac{3}{4} & -\frac{1}{2} \\ -\frac{1}{4} & \frac{1}{2} \end{pmatrix}.$	2p 3p
5p	$\det A(m) = \begin{vmatrix} m & 2 \\ 1 & m+1 \end{vmatrix} = m^2 + m - 2$ $m^2 + m - 2 \leq 1 \Rightarrow m^2 + m - 3 \leq 0, m \in \mathbb{N} \Rightarrow m \in \{0; 1\}.$	2p 3p

Scoala in Papuci