MULTIPLE-CHOICE TEST
in MATHEMATICS

1. (10p) If $x \in \boldsymbol{R}$ is the solution of the equation

$$3^{\sqrt{x^2-2x}} + 3^{\sqrt{x^2-3x}} = 2,$$

then x belongs to the interval:

a. [-1,0)
b. $(0,2)$
c. [-1,1]
d. [2,3]
e. $(1,+\infty)$

2. (5p) The function $f: \boldsymbol{R} \to \boldsymbol{R}, f(x) = x^2 - 2x + 1$ has a minimum for:

a. $x = -1$
b. $x = 0$
c. $x = 2$
d. $x = 1$
e. $x = -2$

3. (5p) The term of rank n of the geometric progression $(b_n)_{n\geq 1}$ with $b_1 = \sqrt{2}, b_2 = 1, b_3 = \frac{\sqrt{2}}{2}, b_4 = \frac{1}{2}$, ..., is:

a. $\left(\sqrt{2}\right)^{n-2}$
b. $\left(\frac{1}{\sqrt{2}}\right)^{n-2}$
c. $\left(\frac{1}{2}\right)^{n-1}$
d. $\left(\frac{1}{\sqrt{2}}\right)^{n-1}$
e. $\left(\frac{1}{\sqrt{2}}\right)^{n}$

4. (10p) The number of solutions $(x,y) \in \boldsymbol{R} \times \boldsymbol{R}$ of the system

$$\begin{cases} x^2 + y^2 = 34 \\ \ln(x) + \ln(y) = \ln(15) \end{cases}$$

is:

a. 0
b. 1
c. 2
d. 3
e. 4

5. (10p) If $A = \begin{pmatrix} 2 & 1 \\ 1 & 2 \end{pmatrix} \in M_2(\boldsymbol{R})$, $I_2 = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \in M_2(\boldsymbol{R})$ and $S = p + q$, where $p, q \in \boldsymbol{R}$ satisfy $A^2 = pA + qI_2$, then

a. $S = 1$
b. $S = -1$
c. $S = 4$
d. $S = 3$
e. $S = -2$

6. (10p) If $(x, y, z) \in \boldsymbol{R} \times \boldsymbol{R} \times \boldsymbol{R}$ is the solution of the system

$$\begin{cases} x + 3y - 6z = 0 \\ 2x - 3y + 8z = 2 \\ 2x + 3y - 4z = 1 \end{cases}$$

and $S = x + y + z$, then:

a. $S = \frac{10}{12}$
b. $S = \frac{11}{12}$
c. $S = 1$
d. $S = \frac{13}{12}$
e. $S = \frac{14}{12}$

7. (10p) If $L = \lim\limits_{\substack{x \to 1 \\ x > 1}} \frac{\int_1^x e^t dt}{x-1}$, then:

a. $L = 2e$
b. $L = e$
c. $L = 0$
d. $L = 1$
e. $L = e + 1$

8. (10p) The value of parameter $a \in \boldsymbol{R}$ for which the function $f: \boldsymbol{R} \to \boldsymbol{R}$, defined by

$$f(x) = \begin{cases} 5x + a, & x \in (-\infty, 0), \\ e^{2x}, & x \in [0, +\infty), \end{cases}$$

is continuous on $\boldsymbol{R}$ is:

a. $a = 0$
b. $a = -1$
c. $a = 2$
d. $a = 1$
e. $a = -2$

9. (10p) If $L = \lim\limits_{n \to +\infty} \frac{1^2 + 2^2 + 3^2 + \cdots + n^2}{3n^4 + 1}$, then:

a. $L = 4$
b. $L = 1$
c. $L = +\infty$
d. $L = 2$
e. $L = 0$

10. (10p) If $I = \int_1^2 (x^2 + 3x - 1) dx$, then:

a. $I = 0$
b. $I = \frac{35}{6}$
c. $I = 5$
d. $I = -\frac{35}{6}$
e. $I = \frac{6}{35}$

[redacted]

Academia de Studii Economice din București
Facultatea de Cibernetică, Statistică și Informatică Economică

Simularea examenului de admitere – mai 2025

BAREM

Codul grilei: **MEn a1**

Cod Grilă

1	2	3	4	5	6
●	○	○	○	○	○

Disciplină

- ○ Matematică (în limba română)
- ● Matematică (în limba engleză)
- ○ Limba Română + Economie

Nr.	A	B	C	D	E	
1	○	○	●	○	○	10p
2	○	○	○	●	○	5p
3	○	●	○	○	○	5p
4	○	○	●	○	○	10p
5	●	○	○	○	○	10p
6	○	○	○	●	○	10p
7	○	●	○	○	○	10p
8	○	○	○	●	○	10p
9	○	○	○	○	●	10p
10	○	●	○	○	○	10p