

Mate 2000 Consolidare
Clasa a VIII-a, partea a II-a, 2021-2022
TESTE DE AUTOEVALUARE

– SOLUȚII –

Test de autoevaluare – p. 17

I. 1. $\frac{1}{3}$.

2. x .

3. $\frac{x}{x-1}$.

4. $\frac{25-x^2}{3x}$.

5. 1.

6. $-\frac{2}{x}$.

II. 1. C. 2. A. 3. C. 4. B.

III. 1. $E(x) = x^2 - x + 1 \Rightarrow E(n) = n(n-1) + 1$. Cum $2 \mid n(n-1) \Rightarrow E(n)$ – număr impar, pentru oricare $n \in \mathbb{N}$.

2. $E(x) = 2x - 1$; $a \in \{1, 2, \dots, 1007\}$, dar $a \neq 1 \Rightarrow \text{card } A = 1006$.

3. $E(x) = \frac{2}{x+2}$.

4. $(x+1)^2 > x \Leftrightarrow x^2 + x + 1 > 0 \Leftrightarrow \left(x + \frac{1}{2}\right)^2 + \frac{3}{4} > 0$, pentru oricare $x \in \mathbb{R}$.

Test de autoevaluare – p. 25

I. 1. $S = \{-6, 6\}$.

2. 4.

3. $S = \{-7, 3\}$.

4. -2.

5. $S = \left\{-\frac{5}{4}, \frac{3}{2}\right\}$.

6. $S = \left\{-1, \frac{5}{4}\right\}$.

II. 1. B. 2. C. 3. A. 4. B.

III. 1. $S = \{-13, 1\}$.

2. $S = \left\{-3, -\frac{1}{2}\right\}$; $m = 5$; $n = 3$.

3. $S = \left\{-4, -\frac{1}{2}\right\}$.

4. $\Delta = 4 > 0$.

Test de autoevaluare – p. 47

I. 1. $\{1, 2, 5, 10\}$.

2. 4.

3. -1.

4. 3.

5. +2.

6. 60.

II. 1. C. 2. C. 3. B. 4. A.

III. 1. b) $x = 2$.

2. $f(x) = -2x + 5$, $C(m + 1; 2m - 5) \in G_f \Rightarrow m = 2$.

3. $f(x) = 3x - 5$.

4. b) $S = 2013 \cdot 1004$. Cum $3 \mid 2013$ și $4 \mid 1004 \Rightarrow 12 \mid S$.

Test de autoevaluare 1 – p. 79

I. 1. 25.

2. 24.

3. $\{-1, 0, 1, 2, 3\}$.

4. 63.

5. $S = \{1\}$.

6. 1.

II. 1. D. 2. B. 3. D. 4. D.

III. 1. a) $a = 2$; $b = 6$; $f(x) = 2x + 6$; b) $d(M, AB) = 2\sqrt{5}$.

2. $x \in (-1; 7)$.

3. 2400 lei.

4. a) $E(x) = \frac{x+3}{2(x-1)}$; b) $n \in \{-3, 0, 2, 3, 5\}$.

Test de autoevaluare 2 – p. 81

- I.** 1. 120.
2. 12.
3. 0.
4. $S = \{-4, 2\}$.
5. 4.
6. $M(2; 2)$.
- II.** 1. B. 2. D. 3. D. 4. C.
- III.** 1. $a = 2\sqrt{5}$; $b = \frac{2\sqrt{5}}{5}$; $m_a = \frac{6\sqrt{5}}{5}$; $m_g = 2$.
2. a) $a = -2$; $b = -1$; $f(x) = -2x + 5$; $g(x) = x - 1$; b) $S = -5130$.
3. 920 și 360.
4. a) $F(x) = \frac{x-2}{x-5}$; b) $a \in \{2, 4, 6, 8\}$.

Test de autoevaluare – p. 103

- I.** 1. 512.
2. 15.
3. $200\sqrt{3}$.
4. 20.
5. 8.
6. $6\sqrt{6}$.
- II.** 1. C. 2. B. 3. D. 4. B.
- III.** 1. a) $CE = 2\sqrt{13}$ cm; $BC = 6$ cm; $\mathcal{A}_t = 264$ cm²; $\mathcal{V} = 288$ cm³;
b) $d(A', BC') = \sqrt{82}$ cm.
2. a) $d(B', AC) = 12$ cm;
b) $d(C', AD) = C'D$; $C'D = 6\sqrt{2}$ cm;
c) Dacă $CQ \perp C'D \Rightarrow d(C, (C'AD)) = CQ = 3\sqrt{2}$ cm.
3. a) $d(A, BD') = \frac{8\sqrt{6}}{3}$ cm;
b) $d(A, CD') = 4\sqrt{6}$ cm;
c) Dacă $AC \cap BD = \{O\}$, $pr_{(BDD')} AD' = D'O \Rightarrow \sphericalangle(AD', (BDD')) = \sphericalangle AD'O = 30^\circ$.

Test de autoevaluare – p. 115

- I.** 1. $75\sqrt{3}$.
2. 10.
3. 24.

4. $8\sqrt{2}$.
5. $144\sqrt{2}$.
6. 6912.

II. 1. A. 2. A. 3. B. 4. C.

III. 1. a) $\mathcal{A}_t = 36(\sqrt{39} + \sqrt{3}) \text{ cm}^2$; $\mathcal{V} = 144\sqrt{3} \text{ cm}^3$; b) $d(A, (VBC)) = \frac{36\sqrt{13}}{13} \text{ cm}$;

c) $\text{tg}(\sphericalangle((VAD), (VAB))) = \frac{2}{3}$; d) $AE = 3\sqrt{3} \text{ cm}$.

2. a) $VO = 18\sqrt{2} \text{ cm}$;

b) $\mathcal{A}_t = 972 \text{ cm}^2$; $\mathcal{V} = 1944\sqrt{2} \text{ cm}^3$;

c) $\sin(\sphericalangle((VAD), (VBC))) = \frac{4\sqrt{2}}{9}$; cum $\sin^2 x + \cos^2 x = 1 \Rightarrow \cos(\sphericalangle((VAD), (VBC))) = \frac{7}{9}$;

d) $d(O, (VBC)) = 6\sqrt{2} \text{ cm}$.

Test de autoevaluare – p. 123

I. 1. $999\sqrt{3}$.

2. $8\sqrt{2}$.

3. $8\sqrt{3}$.

4. 4.

5. $936\sqrt{3}$.

6. $228\sqrt{3}$.

II. 1. B. 2. C. 3. D. 4. D.

III. 1. a) Dacă $\sphericalangle A'AD = 60^\circ \Rightarrow \Delta VAD$ este echilateral $\Rightarrow VA = AD = 18\sqrt{2} \text{ cm} \Rightarrow VO = 18 \text{ cm}$ și $OO' = 12 \text{ cm} \Rightarrow VO' = 6 \text{ cm}$. Cum $\Delta VOM' \sim \Delta VOM \Rightarrow l = 6\sqrt{2} \text{ cm}$;

b) $a_{tr} = 6\sqrt{6} \text{ cm}$;

c) $\mathcal{A}_t = 576\sqrt{3} \text{ cm}^2$; $\mathcal{V} = 3744 \text{ cm}^3$;

d) $\mathcal{A}_{pir} = 648\sqrt{3} \text{ cm}^2$; $\mathcal{V}_{pir} = 3888 \text{ cm}^3$.

2. a) $a_{tr} = 4\sqrt{3} \text{ cm}$;

b) $h = 3\sqrt{5} \text{ cm}$;

c) $\mathcal{V} = 171\sqrt{15} \text{ cm}^3$;

d) $VO = 9\sqrt{5} \text{ cm}$; $VM = 12\sqrt{3} \text{ cm}$; $\mathcal{A}_{pir} = 324\sqrt{3} \text{ cm}^2$; $\mathcal{V}_{pir} = 243\sqrt{15} \text{ cm}^3$.

Test de autoevaluare – p. 131

- I.** 1. 208π .
2. 16.
3. 1458π .
4. 256π .
5. 9.
6. 600π .
- II.** 1. C. 2. D. 3. A. 4. B.
- III.** 1. a) $R = 6$ cm; $G = 12$ cm;
b) $\mathcal{V} = 432\pi$ cm³; $\mathcal{A}_t = 216\pi$ cm².
2. a) $R = 18$ cm; $G = 30$ cm; $\mathcal{V} = 2592\pi$ cm³; $\mathcal{A}_t = 864\pi$ cm²;
b) $u^\circ = 216^\circ$;
c) $\frac{A_{Im}}{A_{IM}} = \left(\frac{3}{4}\right)^2 = \frac{9}{16} = \frac{p}{100} \Rightarrow p = 56,25\%$.

Test de autoevaluare – p. 137

- I.** 1. 5.
2. 36.
3. $576\sqrt{3}\pi$.
4. 1080π .
5. 10.
6. 9.
- II.** 1. A. 2. B. 3. C. 4. D.
- III.** 1. a) $R = 8$ cm; $G = 10$ cm; $h = 6$ cm; $\mathcal{A}_t = 144\pi$ cm²; $\mathcal{V} = 128\pi$ cm³;
b) $\mathcal{A}_{tr} = 140\pi$ cm²; $\mathcal{V}'_{tr} = 112\pi$ cm³.
2. a) $\mathcal{A}_t = 3536\pi$ cm²; $\mathcal{V} = 14976\pi$ cm³;
b) $VO = 30$ cm; $VB = 50$ cm; $\mathcal{A}_{con} = 2000\pi$ cm²; $\mathcal{V}_{con} = 16000\pi$ cm³;
c) $u^\circ = 288^\circ$.