Mate 2000 Consolidare
Clasa a VIII-a, partea a II-a, 2022-2023
TESTE DE AUTOEVALUARE

– SOLUŢII –

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. $E(x) = 2x - 1$; $a \in \{1, 2, ..., 1007\}$, dar $a \neq 1 \Rightarrow$ 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 $3 \mid 2013$ şi $4 \mid 1004 \Rightarrow 12 \mid S$.

Test de autoevaluare 1 – p. 83

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. 85

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 şi 360.

4. a) $F(x) = \frac{x-2}{x-5}$; b) $a \in \{2, 4, 6, 8\}$.

Test de autoevaluare – p. 107

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; $\mathcal{A}_t = 264$ cm^2; $\mathcal{V} = 288$ cm^3;
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 $AC \cap BD = \{O\}$, $\text{pr}_{(BDD')} AD' = D'O \Rightarrow \sphericalangle(AD', (BDD')) = \sphericalangle AD'O = 30°$.

Test de autoevaluare – p. 119

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) $\mathscr{A}_t = 36(\sqrt{39}+\sqrt{3})$ cm^2; $\mathscr{V} = 144\sqrt{3}$ cm^3; b) $d(A, (VBC)) = \frac{36\sqrt{13}}{13}$ cm;

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

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

b) $\mathscr{A}_t = 972$ cm^2; $\mathscr{V} = 1944\sqrt{2}$ 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) $d(O, (VBC)) = 6\sqrt{2}$ cm.

Test de autoevaluare – p. 127

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 $\sphericalangle A'AD = 60° \Rightarrow \Delta VAD$ este echilateral $\Rightarrow VA = AD = 18\sqrt{2}$ cm $\Rightarrow VO =$

$= 18$ cm şi $OO' = 12$ cm $\Rightarrow VO' = 6$ cm. Cum $\Delta VO'M' \sim \Delta VOM \Rightarrow l = 6\sqrt{2}$ cm;

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

c) $\mathscr{A}_l = 576\sqrt{3}$ cm^2; $\mathscr{V} = 3744$ cm^3;

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

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

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

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

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

Test de autoevaluare – p. 135

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) $\mathcal{V} = 432\pi$ cm^3; $\mathcal{A}_t = 216\pi$ cm^2.
2. a) $R = 18$ cm; $G = 30$ cm; $\mathcal{V} = 2592\pi$ cm^3; $\mathcal{A}_t = 864\pi$ cm^2;
b) $u^\circ = 216^\circ$;
c) $\dfrac{A_{l\,m}}{A_{l\,M}} = \left(\dfrac{3}{4}\right)^2 = \dfrac{9}{16} = \dfrac{p}{100} \Rightarrow p = 56{,}25\%$.

Test de autoevaluare – p. 141

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; $\mathcal{A}_t = 144\pi$ cm^2; $\mathcal{V} = 128\pi$ cm^3;
b) $\mathcal{A}_{t\,tr} = 140\pi$ cm^2; $\mathcal{V}_{tr} = 112\pi$ cm^3.
2. a) $\mathcal{A}_t = 3536\pi$ cm^2; $\mathcal{V} = 14976\pi$ cm^3;
b) $VO = 30$ cm; $VB = 50$ cm; $\mathcal{A}_{l\,con} = 2000\pi$ cm^2; $\mathcal{V}_{con} = 16000\pi$ cm^3;
c) $u^\circ = 288^\circ$.