

MATEMATIKA 1
Ponavljjanje - cijeli i racionalni brojevi

1. Izračunajte:

a)

$$(-1)^{2023} - (-1)^{2024} - (-1)^{2025} - (-1)^{2026},$$

b)

$$(-2)^3 - (-3)^4,$$

c)

$$-2[(-2)^3]^4 + 4 \cdot [(-2)^2]^6,$$

d)

$$\frac{5^5}{2^2} - \frac{(-3)^6}{3^3}.$$

2. Pojednostavnite izraze:

a)

$$-9ab + 6ab - 2ab,$$

b)

$$9ax^2 - 6by + (4a - 3ax^2 - 9a),$$

c)

$$(x + 2y - 5z) - (3x - 7y + 2z),$$

d)

$$-5(-x - 2y + 3z),$$

e)

$$[2a - b - (a + 2b)][3a - 2b - (2a - 3b)].$$

3. Izračunajte:

a)

$$\frac{1}{8} - \frac{5}{8} + \frac{9}{8},$$

b)

$$5 + \frac{1}{12} - 3 - \frac{1}{4} + \frac{7}{8},$$

c)

$$\frac{1}{2} + \left[\frac{1}{2} - \left(\frac{1}{4} - \frac{1}{8} \right) \right] \cdot \frac{5}{2},$$

d)

$$\left(\frac{3}{8} - \frac{5}{4} \right) : \left(\frac{3}{16} - \frac{1}{8} \right),$$

e)

$$\frac{\frac{11}{2} - \frac{8}{3}}{\frac{11}{2} + \frac{8}{3}} : \frac{17}{7},$$

f)

$$\left(\frac{\frac{5}{7} + \frac{1}{14} - \frac{1}{21}}{\frac{5}{2} + \frac{3}{5}} + \frac{2}{3} - \frac{1}{7} \right) \cdot \frac{1}{1 + \frac{1}{7}},$$

g)

$$\left[\left(2 + \frac{1}{5} - \frac{5 - \frac{1}{2}}{3} \right) \left(2 + \frac{6}{7} \right) - \frac{1\frac{1}{3} + \frac{3}{4}}{\frac{3}{44} + \frac{4}{33}} \right] \cdot \left[\left(2 + \frac{1}{3} : 7 \right) \right].$$

4. Izračunajte:

a)

$$\left[\left(\frac{4}{3}\right)^2 - \left(\frac{1}{3}\right)^4 - \left(1 + \frac{2}{9}\right)^2 \right] : \left(11 \left(\frac{1}{3}\right)^4\right),$$

b)

$$\frac{\left(\frac{1}{2} - \frac{1}{3}\right)^3 \cdot 36 - \left(\frac{1}{3} - \frac{1}{4}\right)^3 \cdot 144}{\left(\frac{1}{5}\right)^3 \cdot \left(2 + \frac{1}{2}\right)^4 + \left(\frac{1}{7}\right)^3 \cdot \left(\frac{7}{2}\right)^4},$$

c)

$$\frac{\left(-\frac{1}{11}\right)^3 \cdot \left(5 + \frac{1}{2}\right)^3 + \left(-\frac{1}{16}\right)^5 \cdot \left(-5 - \frac{1}{3}\right)^5 \cdot \left(-\frac{3}{2}\right)^5}{\left(-\frac{1}{2}\right)^5 \cdot \left(\frac{4}{19}\right)^7 \cdot \left(4 + \frac{3}{4}\right)^7},$$

d)

$$\left[\left(\frac{3}{4} + \frac{1}{2}\right)^{-2} : \left(\frac{1}{2} - \frac{1}{3}\right)^{-2} \right] \cdot \left(7 + \frac{1}{2}\right)^2,$$

e)

$$\left(\frac{2^{-1} + 2^{-2} + 2^{-3}}{2^{-1} + 2^{-2} - 2^{-3}} - \frac{3^{-1} + 3^{-2} + 3^{-3}}{3^{-1} + 3^{-2} - 3^{-3}} \right)^{-1},$$

f)

$$\left[\frac{\left(\frac{1}{2}\right)^{-1} + \left(\frac{1}{2}\right)^{-2} + \left(\frac{1}{2}\right)^{-3}}{\left(\frac{1}{2}\right)^{-1} + \left(\frac{1}{2}\right)^{-2} - \left(\frac{1}{2}\right)^{-3}} : \frac{\left(\frac{1}{3}\right)^{-1} + \left(\frac{1}{2}\right)^{-2}}{\left(\frac{1}{3}\right)^{-1} - \left(\frac{1}{3}\right)^{-2}} \right] : \left[\left(\frac{1}{2}\right)^{-3} - \left(\frac{1}{2}\right)^0 \right]^{-3}.$$