

## Домаћи задатак за тринаесту недељу

47. Скратити разломке:

$$\begin{aligned}
 & \text{а) } \frac{1-a^2}{a-1}; \quad \text{б) } \frac{x^3-x}{x^3+2x^2+x}; \quad \text{в) } \frac{6a^2b^2-3a^3b-3ab^3}{4ab^3-4a^3b}; \\
 & \text{г) } \frac{a^4+1-2a^2}{1-a-a^2+a^3}; \quad \text{д) } \frac{x^2-5x+6}{x^2-3x+2}; \quad \text{ђ) } \frac{a^2bc-b^3c+2b^2c^2-bc^3}{4a^2b^2-(a^2+b^2-c^2)^2}; \\
 & \text{е) } \frac{1-a^2}{(1+ax)^2-(a+x)^2}; \quad \text{ж) } \frac{a^2+b^2-c^2-d^2+2(ab-cd)}{a^2-b^2+c^2-d^2+2(ac-bd)}; \\
 & \text{з) } \frac{(a^2+a+1)^2-(a-1)^2}{(a+1)^2-(a^2-a+1)^2}; \quad \text{и) } \frac{a(b^2+1)+b(a^2+1)}{a^2b^2-1}; \quad \text{ј) } \frac{a^6+a^4-a^2-1}{a^8-a^6+a^2-1}; \\
 & \text{к) } \frac{x^3+ax^2+ax+a-1}{x^3+bx^2+bx+b-1}; \quad \text{л) } \frac{(a+1)^4+a+1}{a^4-(a^2+2a+2)^2}; \quad \text{љ) } \frac{x^4-3x^2+1}{(3x^2+3x-3)^2}; \\
 & \text{м) } \frac{a^3(a-2b)+b^3(2a-b)}{(a-b)^3(a+b)}; \quad \text{н) } \frac{c^3+8}{c^2(c-4)+8(c-1)}; \quad \text{њ) } \frac{x^{10}-1}{x^6-x^5+x-1}.
 \end{aligned}$$

$$\begin{aligned}
 48. & \text{ а) } \frac{x^3-6x^2+11x-6}{(x^3-4x^2+3x)(x-2)}; \quad \text{ б) } \frac{x^4+x^2+1}{x^4+2x^3+3x^2+2x+1}; \\
 & \text{ в) } \frac{a^4+3a^2b^2+b^4-2a^3b-2ab^3}{a^4+a^2b^2+b^4}; \quad \text{ г) } \frac{a^3+b^3+a(b^2+c^2)+b(a^2+c^2)}{a^3-b^3+a(b^2+c^2)-b(a^2+c^2)}; \\
 & \text{ д) } \frac{a^3+b^3+a^2(b+c)+b^2(a+c)}{a^3-b^3+a^2(b+c)-b^2(a+c)}; \quad \text{ ђ) } \frac{x^3-x^2-x+1}{x^4-x^3-3x^2+5x-2}; \\
 & \text{ е) } \frac{x^{12}-128x^6+4096}{(x^3-4x^2+8x-8)^2}; \quad \text{ ж) } \frac{bc(c^2-b^2)+ac(a^2-c^2)+ab(b^2-a^2)}{b^2c^2(c-b)+a^2c^2(a-c)+a^2b^2(b-a)}; \\
 & \text{ и) } \frac{a^3+b^3+c^3-3abc}{a^2+b^2+c^2-ab-bc-ca}; \quad \text{ з) } \frac{x^4+4}{a(x^2+2)-2ax-(x-1)^2-1}.
 \end{aligned}$$

49. Средити дате изразе :

$$\begin{aligned}
 & \text{ а) } \frac{1}{6x+3} - \frac{9x+3}{8x^2-2} + \frac{2}{2x-1}; \quad \text{ б) } \frac{a^2+ab+b^2}{a+b} + \frac{a^2-ab+b^2}{a-b} - \frac{2a^2b}{a^2-b^2}; \\
 & \text{ в) } \left( \frac{x}{y^2+xy} - \frac{2}{x+y} + \frac{y}{x^2+xy} \right) : \left( \frac{x}{y} - 2 + \frac{y}{x} \right); \\
 & \text{ г) } \frac{30x^2}{9x^3-x} + \frac{8}{6x-2} - \frac{15x+5}{9x^2+6x+1}; \quad \text{ д) } \frac{x-5}{x-3} + \frac{x+3}{x+5} + \frac{16}{x^2+2x-15}; \\
 & \text{ ђ) } \frac{x}{2x-y} + \frac{2x^2+2xy}{2xy+3y^2} - \frac{4xy}{4x^2+4xy-3y^2}; \\
 & \text{ е) } \frac{\left[ \frac{1}{(a-b)^2} + \frac{2}{a^2-b^2} + \frac{1}{(a+b)^2} \right] (a^2-b^2)}{(a+b)^2+2(a^2-b^2)+(a-b)^2}; \\
 & \text{ ж) } \left( \frac{x^2-xy}{x^2y+y^3} - \frac{2x^2}{y^3-xy^2+x^2y-x^3} \right) \cdot \left( 1 - \frac{y-1}{x} - \frac{y}{x^2} \right).
 \end{aligned}$$

50. Упростите изразе:

$$\text{a) } \frac{(18x^2 + 3x)^2}{108x^3 - 3x}; \quad \frac{a^2 - b^2 + (a+b)^2}{a^3 + 2a^2b + ab^2}; \quad \left(2a - \frac{10a-9}{2a-1}\right) \cdot \frac{1-2a}{9-4a^2};$$

$$\text{б) } \left(\frac{a}{(a-2)^2} + \frac{8}{2a-a^2}\right) \cdot \left(1 + \frac{2}{a-4}\right)^2; \quad \frac{(2x-1)^3 - 4x^2 + 1}{8x^3 - 24x^2 + 18x}.$$

$$\text{в) } \left[\frac{(x+y)^2 - 4xy}{xy - x^2} + \left(\frac{x-y}{x}\right)^2\right]^2; \quad \frac{x^2y^2 - y^4}{x^4};$$

$$\text{г) } \left(\frac{x^2 - x - 3}{x-4} - x + 2\right); \quad \frac{25x^2 - 110x + 121}{x^2 - 2x - 8}.$$

$$51. \text{ a) } \left(\frac{1}{4x+2} - \frac{1-x}{8x^3+1}; \quad \frac{1-2x}{4x^2-2x+1}\right); \quad \frac{2x-1}{4x+2} - \frac{1}{4x^2-4x+1};$$

$$\text{б) } 3x^2; \quad \left(\frac{x^4 - 2x^3 + x^2 - 16}{x^2 - x - 4} + \frac{3x^4 + x^3 + 4x^2 + x + 3}{3x^2 - 2x + 3} + \frac{x^4 + 2x^3 + 5x^2 + 4x + 4}{x^2 + x + 2} - x - 7\right);$$

$$\text{в) } \left(\frac{1-x}{x^2+x^3-x^4} - \frac{x^3+x-2}{x^5-x^3-2x^2-x}\right); \quad \left(\frac{1+x}{x^3+x^4+x^5} - \frac{1-x+x^2}{x^3}\right).$$