N. FRACȚII ALGEBRICE - PROBLEME PROPUSE

a) Simplificați fracțiile:

1) $\dfrac{x^2 - 6x + 9}{x^2 - 9}$ **2)** $\dfrac{x^3 - x^2 + x}{x^3 + 1}$ **3)** $\dfrac{x^3 - 27}{x^3 + 3x^2 + 9x}$

4) $\dfrac{4x^2 - 4x - 15}{4x^2 - 12x + 5}$ **5)** $\dfrac{2x^2 - 4x - 6}{x^3 - x^2 - 5x - 3}$ **6)** $\dfrac{x^2 - 49}{x^3 + 14x^2 + 49x}$

7) $\dfrac{(x^2 + 2x)^2 - 2(x^2 + 2x) - 3}{(x^2 + 2x)^2 - 9}$ **8)** $\dfrac{(x^2 + x)(x^2 + x + 1) - 2}{(x^2 + x)(x^2 + x + 3) + 2}$ **9)** $\dfrac{(x^2 - 5x + 6)^2 - (x^2 - 4)^2}{2x^3 - 5x + 2}$

10) $\dfrac{(x^2 - 1)(x^2 - 3) + 1}{(x^2 - 1)(x^2 - 4) + 2}$ **11)** $\dfrac{x^3 - 2x}{x^2 + 2\sqrt{2}x + 2}$ **12)** $\dfrac{x^3 - 2x^2 + 2x - 1}{x^2 - 2x + 1}$

13) $\dfrac{(x - 1)^2 - (x + 3)^2}{(2x + 3)^2 - (x + 2)^2}$ **14)** $\dfrac{(x^2 + 2)\cdot(x^2 + 5) + 2}{(x^2 + 2)\cdot(x^2 - 3) - 6}$ **15)** $\dfrac{(x^2 - 3x + 1)(x^2 - 3x + 4) + 2}{(x^2 - 3x + 1)(x^2 - 3x + 6) + 6}$

b) Efectuați:

1) $\left(\dfrac{1}{3x - 2} - \dfrac{4}{2 + 3x} - \dfrac{3x - 7}{4 - 9x^2}\right) \cdot \dfrac{3x^2 + 5x + 2}{1 - 2x}$ **2)** $\dfrac{x^2 + 5x + 6}{x^2 - 9} : \left(\dfrac{x^2 - x - 6}{x^2 - 6x + 9} - \dfrac{x^2 + x - 6}{x^2 + 6x + 9}\right) \cdot \dfrac{10x}{x^2 - 4}$

3) $\dfrac{x + 2}{x^2 - 4} - \dfrac{x + 1}{x^2 - 4} \cdot \left(\dfrac{4x + 3}{2x + 1} - \dfrac{2x - 1}{x + 1}\right)$ **4)** $\left(\dfrac{x + 2}{x + 3} - \dfrac{2x - 1}{3 - x} + \dfrac{x^2 + 10}{x^2 - 9}\right) : \left(2 - \dfrac{5}{x + 3}\right)$

5) $\left[\dfrac{x + 2}{x - 3} - \dfrac{x - 2}{x - 3} : (x^2 + x - 6) - \dfrac{x - 2}{x + 3}\right] : \dfrac{10x^2 - 19x - 2}{x^2 - 9}$

6) $\left(\dfrac{x + 3}{x - 1} - \dfrac{x - 2}{x + 1} + \dfrac{6x}{1 - x^2}\right) : \dfrac{1}{x - 1} + 1$

7) $\left[\dfrac{1}{(x + 1)(x + 2)} + \dfrac{1}{(x + 2)(x + 3)} + \dfrac{1}{(x + 3)(x + 4)} + \ldots\ldots\ldots + \dfrac{1}{(x + 99)(x + 100)}\right] : \dfrac{1}{x^2 + 101x + 100}$

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