Lomené výrazy

Zkraťte lomené výrazy:

1) $\frac{ax+ay-bx-by}{ax-ay-bx+by}$ **[** $\frac{x+y}{x-y}$ **]**

2) $\frac{x^3-x^2-x+1}{x^4-2x^2+1}$ **[** $\frac{1}{x+1}$ **]**

3) $\frac{x^2-6x+9}{x^2+x-12}$ **[** $\frac{x-3}{x-4}$ **]**

4) $\frac{3a^3+ab^2-6a^2b-2b^3}{9a^5-ab^4-18a^4b+2b^5}$ **[** $\frac{1}{3a^2-b^2}$ **]**

5) $\frac{a^2+b^2-c^2-2ab}{a^2-b^2+c^2-2ac}$ **[** $\frac{a-b+c}{a+b-c}$ **]**

6) $\frac{(a+b)^2-c^2}{a+b+c}$ **[** $a+b-c$ **]**

Zjednodušte výrazy:

1) $\frac{3+2x}{2-x}-\frac{2-3x}{2+x}+\frac{16x-x^2}{x^2-4}$ **[** $\frac{1}{x+2}$ **]**

2) $\frac{2x-y}{x^2+xy}-\frac{1}{x}-\frac{1}{x+y}$ **[** $\frac{-2y}{x^2+xy}$ **]**

3) $\frac{2a-1}{2a}-\frac{2a}{2a-1}-\frac{1}{2a-4a^2}$ **[** $\frac{-1}{a}$ **]**

4) $\frac{1}{6x-4y}-\frac{1}{6x+4y}-\frac{3x}{4y^2-9x^2}$ **[** $\frac{1}{3x-2y}$ **]**

5) $\frac{4a^2-3a+5}{a^3-1}-\frac{1-2a}{a^2+a+1}+\frac{6}{1-a}$ **[** $\frac{-12a}{a^3-1}$ **]**

6) $\frac{1}{x-2a}+\frac{1}{x+2a}+\frac{8a^2}{4a^2x-x^3}$ **[** $\frac{2}{x}$ **]**

7) $\frac{x^2-2}{1-x}-\frac{2x+1}{1+x+x^2}-\frac{x^4-4x-3}{1-x^3}$ **[** $\frac{x}{1-x}$ **]**

8) $\frac{1}{x^2-4x+3}+\frac{1}{x^2-8x+15}-\frac{2}{x^2-6x+5}$ **[0]**

9) $\frac{a^3}{(a-b)(a-c)}+\frac{b^3}{(b-c)(b-a)}+\frac{c^3}{(c-b)(c-a)}$ **[** $a+b+c$ **]**

10) $\frac{5m-5n}{4m+4n}\cdot\frac{8m+8n}{15m-15n}$ **[** $\frac{2}{3}$ **]**

11) $\frac{2x^2+8x+8}{x^2-4}\cdot\frac{x^3-8}{2x+4}$ **[** x^2+2x+4 **]**

12) $\left(1-\frac{x^2}{y^2}\right)\cdot\left(\frac{x^2}{y^2-x^2}+1\right)$ **[1]**

13) $\left(\frac{x-1}{x-2}-\frac{x}{x-1}\right)\cdot\left(x-\frac{3x}{x+1}\right)$ **[** $\frac{x}{x^2-1}$ **]**

14) $\left(\frac{1}{a+1}-\frac{2a}{a^2-1}\right)\cdot\left(\frac{1}{a}-1\right)$ **[** $\frac{1}{a}$ **]**

15) $\left(\frac{y+1}{y^2+1-2y}+\frac{1}{y-1}\right):\frac{y}{y-1}$ **[** $\frac{2}{y-1}$ **]**

16) $\left(\frac{a+1}{2a-2}+\frac{6}{2a^2-2}-\frac{a+3}{2a+2}\right)\cdot\frac{4a^2-4}{3}$ **[** $\frac{20}{3}$ **]**

17) $\left(\frac{1}{n-1}-\frac{3}{n^3-1}-\frac{3}{n^2+n+1}\right)\cdot\left(n+\frac{2n+1}{n-1}\right)$ **[1]**

18) $\left(\frac{b}{a^2+ab}-\frac{2}{a+b}+\frac{a}{b^2+ab}\right):\left(\frac{b}{a}-2+\frac{a}{b}\right)$ **[** $\frac{1}{a+b}$ **]**

19) $\left(\frac{2a}{a+2}+\frac{6a}{6-3a}+\frac{8a}{a^2-4}\right):\frac{a-4}{a-2}$ **[0]**

20) $\left[\left(\frac{p+q}{q}-\frac{2p}{p+q}\right)\cdot\left(1+\frac{q+1}{p}+\frac{q}{p^2}\right)\right]:\frac{p^2+q^2}{p^2q}$ **[** $p+1$ **]**

21) $\left[\left(\frac{s}{r-s}+\frac{r}{r+s}\right)\cdot\left(\frac{r^2}{s^2}+\frac{s^2}{r^2}-2\right)\right]:\frac{r^4-s^4}{r^2s^2}$ **[1]**

22) $\left(\frac{x^2-2x+4}{4x^2-1}\cdot\frac{2x^2+x}{x^3+8}-\frac{x+2}{2x^2-x}\right):\frac{4}{x^2+2x}-\frac{x+4}{3-6x}$ **[** $\frac{-1}{3}$ **]**

23) $\frac{\frac{a}{a+b}+\frac{b}{a-b}}{\frac{a}{a-b}-\frac{b}{a+b}}$ **[1]**

24) $\frac{\frac{1}{1-x}+\frac{1}{1+x}}{\frac{1}{1-x}-\frac{1}{1+x}}$ **[** $\frac{1}{x}$ **]**