OPERACE S LOMENÝMI VÝRAZY (M-V-09-06)

Vypočítej.

1) $\frac{x^2-16}{3}-\frac{3x+12}{(x+4)^2}=\frac{(x^2-16)(x+4)^2-3(3x+12)}{3(x+4)^2}=$

$=\frac{(x^2-16)(x^2-8x+16)-9x-36}{3(x^2+8x+16)}=\frac{x^4-8x^3+16x^2-16x^2+128x-256-9x-36}{3x^2+24x+48}=$

$=\frac{x^4-8x^3+119x-292}{3(x+4)^2}$

2) $\frac{5z-5+xz-x}{z^2-1}\cdot\frac{2x+2}{5+x}=\frac{5(z-1)+x(z-1)}{(z-1)(z+1)}\cdot\frac{2(x+1)}{5+x}=\frac{(z-1).(5+x)}{(z-1)(z+1)}\cdot\frac{2(x+1)}{5+x}=$

$=\frac{1}{z+1}\cdot\frac{2(x+1)}{1}=\frac{2x+2}{z+1}$

3) $\frac{y^2-x^2}{7y+5}+\frac{14y+10}{2}=\frac{2(y-x).(y+x)+(7y+5).(7y+5).2}{2.(7y+5)}=$

$=\frac{2(y^2-x^2)+(49y^2+70y+25).2}{2.(7y+5)}=\frac{2y^2-2x^2+98y^2+140y+50}{2.(7y+5)}=$

$=\frac{100y^2-2x^2+140y+50}{2.(7y+5)}=\frac{2.(50y^2-x^2+70y+25)}{2.(7y+5)}=\frac{50y^2-x^2+70y+25}{7y+5}$

4) $\frac{6x-3y}{8z-5}:\frac{y-2x}{64z^2-25}=\frac{3(2x-y)}{8z-5}\cdot\frac{(8z-5).(8z+5)}{-(2x-y)}=\frac{3}{1}\cdot\frac{8z+5}{-1}=-\frac{3(8z-5)}{1}$ **= -3(8z-5)**

5) $\frac{9+3a}{-4a-2b}.-\frac{2a+b}{3}-\frac{a}{3+a}=\frac{3(3+a)}{-2(2a+b)}.-\frac{2a+b}{3}-\frac{a}{3+a}=\frac{3+a}{2}-\frac{a}{3+a}=$

$=\frac{(3+a).(3+a)-2.a}{2(3+a)}=\frac{9+6a+a^2-2a}{6+2a}=\frac{a^2+4a+9}{2(3+a)}$

6) $\frac{\frac{x+1}{x-1}+\frac{x^2}{x-1}}{\frac{x-1}{2}-\frac{x-1}{x+1}}=\frac{x+1+x^2}{x-1}:\frac{(x-1).(x+1)-2(x-1)}{2(x+1)}=\frac{x^2+x+1}{x-1}.\frac{2(x+1)}{(x-1).[(x+1)-2]}=$

$=\frac{2(x^2+x+1).(x+1)}{(x-1)^2.(x-1)}=\frac{(2x^2+2x+2).(x+1)}{(x^2-2x+1).(x-1)}=\frac{2x^3+2x^2+2x+2x^2+2x+2}{x^3-2x^2+x-x^2+2x-1}=$

$=\frac{2x^3+4x^2+4x+2}{x^3-3x^2+3x-1}$