

## Úprava výrazů - Zjednodušení výrazů

**Příklad 1.** Upravte:

a)  $\frac{2}{x} - \frac{3}{2x} + \frac{1}{3x}$

b)  $\frac{3m-1}{2} - \frac{2m+1}{3} - m$

c)  $\frac{2a-b}{3} + \frac{b-3a}{2} + 2b - a$

d)  $\frac{3a-b}{a-b} + \frac{2b}{b-a}$

e)  $\frac{1}{a-b} - \frac{1}{a+b} - \frac{1}{b^2-a^2}$

f)  $\frac{1}{x} + \frac{x-1}{x^2} - \frac{3x}{x^3}$

**Příklad 2.** Zjednodušte:

a)  $\frac{a^2+4ab+4b^2}{a^2-2ab} : \frac{a+2b}{a-2b}$

b)  $\frac{3p^2q-pq^2}{pq-p^2q^2} : \frac{3p-q}{pq-1}$

c)  $\frac{x^3-1}{x^2-xy-x+y} : \frac{y^2-x^2}{(x-1)^2+3x}$

d)  $\frac{1-\frac{x^2+y^2}{y^2-x^2}}{\frac{x-y}{x+y} - \frac{x+y}{x-y}}$

e)  $\frac{(a-1)^3-3a+1}{a^2-4} : \left(1 - \frac{1}{a-2}\right)$

f)  $\frac{x^2-3xy+2y^2}{x^2-xy-2y^2}$

g)  $\frac{5mn-5m-2n^2+2n}{5mn+5m-2n^2-2n}$

h)  $\frac{2r^2-3rs-6rt+9st}{2r^2-3rs+4rt-6st} \cdot \left(r + \frac{5rt}{r-3t}\right)$

i)  $\left(\frac{1+s}{s} - \frac{4t-1}{2t}\right) : \left(\frac{s^2-4t^2}{12s^2t^2}\right)$

j)  $\frac{(2r+3t)^2-(2r-3t)^2}{(2r+3t)^2-6t(3r+3t)} : \left(\frac{1}{2r-3t} + \frac{1}{2r+3t}\right)$

k)  $\left(\frac{1-x}{1+x} - \frac{1-x}{1+x}\right) : \frac{(x-1)\cdot(x+2)}{x}$

l)  $\left[\left(\frac{2u}{3v}\right)^2 - \left(\frac{3v}{2u}\right)^2\right] : \left(\frac{8u^3}{9v^2} + \frac{4u^2}{3v} + 2u + 3v\right)$

m)  $\left(\frac{1}{x-y} - \frac{1}{x+y}\right) \cdot \left(\frac{x}{2y} - \frac{y}{2x} - \frac{2(x-y)^2}{(x-y)^2-(x+y)^2}\right)$

n)  $\frac{\frac{x^2+xy}{xy-y^2}}{\frac{x^2-xy}{xy+y^2}}$

o)  $\frac{\frac{1}{a+b} + \frac{1}{a-b}}{\frac{1}{a+b} + \frac{1}{b-a}}$

p)  $\frac{v^2+4v+4}{uv+2u+v+2} : \frac{v+2}{u^2+u}$

q)  $\left(\frac{2x}{6x+10} \cdot \frac{2x-1}{13+8x} + 1\right) : \left(\frac{2x}{6x+10} - \frac{2x-1}{13+8x}\right)$