Dělení lomených výrazů .

1) Dělte:

a) $\frac{a}{3} : \frac{b}{4} =$

b) $-8a^2b^4 : \left(-\frac{4b^3}{3a}\right) =$

c) $\frac{x^2}{y^2} : \frac{x}{y} =$

d) $\frac{8x}{21y^2} : \frac{6x^2}{7y} =$

e) $\frac{r}{x} : \frac{2r}{x^2} + r \cdot \frac{3}{x} =$

f) $a \cdot \frac{1}{b} : b \cdot \frac{1}{a} =$

2) Dělte a upravte:

a) $\frac{x(a+b)}{2a} : \frac{x^2}{a} =$

b) $\frac{2c-2}{d^2} : \frac{c-1}{d} =$

c) $\frac{t^2-2t}{3} : \frac{t}{6} =$

d) $\frac{3r}{s+5} : \frac{r}{s-2} =$

e) $\frac{x^2-xy}{y} : \frac{x-y}{xy} =$

f) $\frac{a+b}{a-b} : \frac{b+a}{b-a} =$

g) $\frac{b-2}{a+b} : \frac{3b-6}{2a+2b} = \ldots\ldots \frac{2}{3}$

h) $\frac{x^2y}{5(x+1)} : \frac{yx^2}{2x+2} = \ldots\ldots \frac{2x}{5y}$

i) $\frac{y^2+y}{4y-12} : \frac{7(y+1)}{4y} = \ldots\ldots \frac{y^2}{7y-21}$

3) Upravte:

a) $\frac{a^2+3}{2a} : \frac{a^3+3a}{4a^2} =$

b) $\frac{15+15r}{r^2-1} : \frac{3r+3}{r^3-r} =$

c) $\frac{2m+6}{m^2} : \frac{m+3}{m^2-mn} =$

d) $\frac{(x+y)^2}{x^2-y^2} : \frac{x+y}{x-y} = \ldots\ldots 1$

e) $\frac{v^2-1}{v^3} : \frac{(v+1)^2}{v^2} =$

f) $\frac{a^2+2ab+b^2}{a^2+6b+9} : \frac{a^2-b^2}{(a+3)(a-b)} =$

g) $\frac{r+3}{r-3} : \frac{r^2+3r}{2r^2-18} =$

h) $\frac{5-5x}{(1+x)^2} : \frac{10(1-x^2)}{3(1+x)} = \ldots\ldots \frac{3}{2(1+x)^2}$

4) Proveďte:

a) $\frac{2x+2y}{3y-6} : \frac{x+y}{y-2} =$

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

c) $\frac{2(a+b)}{3a-3b} : \frac{6a+6b}{a^2-ab} =$

d) $\frac{p+q}{p-q} : \frac{p^2-q^2}{p^2-2pq+q^2} =$

e) $\frac{3a^2+12a+12}{a-2} : \frac{6(a+2)}{a^2-4} =$

f) $\frac{a(x^2-y^2)}{(x+y)^2} : \frac{a(x-y)^2}{3(x+y)} =$

5) Vypočítejte:

a) $\frac{v-3}{v^2+v} : \frac{3v-9}{v(1+v)} = \ldots\ldots\ldots \frac{1}{3}$

b) $\frac{a^2-25}{a^2+10a+25} : \frac{7a-35}{a^2+5a} =$

c) $\frac{x+2}{4x} : \frac{x^2}{x-2} =$

d) $\frac{x^2-4y^2}{x^2-xy} : \frac{x^2+2xy}{x-y} =$

e) $\frac{z^2-1}{z^2+2z+1} : \frac{4z-4}{3z+3} =$

f) $\frac{a^2-4b^2}{a^3+a^2b} : \frac{a^2+2ab}{a-b} =$

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6) Upravte:

a) $\left(\frac{u}{v}-\frac{v}{u}\right):\frac{u+v}{uv}=\ldots\ldots\ldots u-v$

b) $\left(\frac{1}{b}-\frac{1}{a}\right):(a^2-ab)=\ldots\frac{1}{a^2b}$

c) $\left(\frac{x^2}{4}-1\right):\left(\frac{x}{2}+1\right)=\ldots\frac{x-2}{2}$

d) $\left(\frac{2a+1}{b}-\frac{3a+2}{2b}\right):\left(\frac{b}{a}\cdot\frac{a}{2b}\right)=\ldots\frac{a}{b}$

e) $(m+1):\left(m-\frac{1}{m}\right)=$

f) $\left(z-\frac{1}{2}\right):(z-1)=$

g) $\left(\frac{x}{2}-\frac{2}{x}\right):\left(\frac{2+x}{2x}\right)=$

h) $(y+2):\left(\frac{1}{y}+\frac{1}{2}\right)=$

7) Upravte:

a) $\left(\frac{1}{n}-\frac{1}{m}\right):\frac{3m-3n}{m^2}=$

b) $\left(3+\frac{3s}{r}\right):\left(\frac{s}{r^2}+\frac{1}{r}\right)=$

c) $\left(3-\frac{1}{x}\right):\frac{9x^2-1}{x^3}=$

d) $\left(p^2-\frac{1}{p^2}\right):\left(p+\frac{1}{p}\right)=$

e) $\left(\frac{3x-2}{3+2x}+\frac{2x+1}{2x+3}\right):\frac{5x-1}{3+2x}=$

f) $\left(\frac{a^2b^2}{a+b}:\frac{ab}{2a+2b}\right)\cdot\left(\frac{a}{b}+\frac{b}{a}\right)=$

g) $\left(\frac{a}{x-a}-\frac{a}{x+a}\right):\frac{2a^2}{x^2+2ax+a^2}=$

h) $\left(\frac{1}{1-a}-1\right):\left(a-\frac{1-2a^2}{1-a}+1\right)=$

8) Vypočtěte a zjednodušte:

a) $\left(\frac{a+1}{2a-2}+\frac{6}{2a^2-2}-\frac{a+3}{2a+2}\right):\frac{3}{4a^2-4}=$

b) $\left(\frac{b}{a^2+ab}-\frac{2}{a+b}+\frac{a}{b^2+ab}\right):\left(\frac{b}{a}-2+\frac{a}{b}\right)=$

c) $\left(m+1-\frac{1}{1-m}\right):\left(m-\frac{m^2}{m-1}\right)=$

d) $\left(\frac{c^2+d^2}{c}-2d\right):\left[\left(\frac{1}{d^2}-\frac{1}{c^2}\right)\cdot\frac{cd}{c+d}\right]=$

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