OMAGIU LUI GRIGORE GHEBA (2)
Operaţii cu fracţii algebrice – o introducere

1. Efectuaţi:

a) $\left(\frac{1}{a}+\frac{1}{b}\right):\frac{1}{ab}$ **R**: $a+b$

b) $\left(\frac{1}{a}-\frac{1}{b}\right)\cdot\left(\frac{1}{a}+\frac{1}{b}\right)\cdot\frac{b^2a^2}{b^2-a^2}$ **R**: 1

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

d) $\frac{x+y}{x^2y}+\frac{x-y}{xy^2}$ **R**: $\frac{x^2+y^2}{x^2y^2}$

e) $\frac{1}{a^2}+\frac{2}{ab}+\frac{1}{b^2}$ **R**: $\frac{(a+b)^2}{a^2b^2}$

f) $\frac{1}{25}-\frac{2}{5x}+\frac{1}{x^2}$ **R**: $\frac{(x-5)^2}{25x^2}$

g) $\frac{a-b}{ab}+\frac{b-c}{bc}+\frac{c-a}{ca}$ **R**: 0

2. Calculaţi:

a) $\frac{x}{x+y}+\frac{2xy}{x^2-y^2}+\frac{y}{x-y}$ **R**: $\frac{x+y}{x-y}$

b) $\left(\frac{1}{x-1}+\frac{1}{x+1}\right):\left(\frac{1}{x+1}+\frac{2}{x^2-1}+\frac{1}{x-1}\right)$ **R**: $\frac{x}{x+1}$

c) $\frac{a}{a-b}-\frac{b}{a+b}-\frac{2ab}{a^2-b^2}$ **R**: $\frac{a-b}{a+b}$

d) $\frac{a}{a+b}-\frac{b}{a-b}-\frac{a^2+b^2}{a^2-b^2}$ **R**: $\frac{2b}{b-a}$

e) $\left(\frac{3}{x-2}-\frac{2}{x+2}-\frac{10}{x^2-4}\right)\cdot\frac{x^2-4x+4}{x}$ **R**: $\frac{x-2}{x+2}$

f) $\frac{4x^2-1}{8x}\cdot\left(\frac{2x+1}{2x-1}-\frac{2x-1}{2x+1}\right)$ **R**: 1

g) $\left(\frac{a+1}{a-1}+\frac{a-1}{a+1}-1\right):\left(\frac{4}{a^2-1}+1\right)$ **R**: 1

h) $\left[1-\left(\frac{1+b}{1-b}-2+\frac{1-b}{1+b}\right):\frac{4b}{1-b}\right]:\frac{1}{1+b}$ **R**: 1

i) $\left(\frac{x-y}{x+y}+\frac{x+y}{x-y}\right)\cdot\left(\frac{x^2+y^2}{2xy}+1\right)\cdot\frac{xy}{x^2+y^2}$ **R**: $\frac{x+y}{x-y}$

3. Calculaţi:

a) $\frac{18}{x^2-9}+\frac{x}{x+3}+\frac{3}{3-x}$ **R**: $\frac{x-3}{x+3}$

b) $\left(a-\frac{4ab}{a+b}+b\right):\left(\frac{a}{a+b}-\frac{b}{b-a}-\frac{2ab}{a^2-b^2}\right)$ **R**: $a-b$

c) $\left(\frac{x}{x^2-4}+\frac{2}{2-x}+\frac{1}{x+2}\right):\left(x-2+\frac{10-x^2}{x+2}\right)\cdot(2-x)$ **R**: 1

d) $\left(\frac{3}{2x-1}+\frac{7}{2x+1}+\frac{20x-4}{1-4x^2}\right):\frac{2}{x+1}$ **R**: 0

e) $\left(u-\frac{3uv}{u+v}+v\right):\left(\frac{u}{u+v}-\frac{v}{v-u}-\frac{uv}{u^2-v^2}\right)$ **R**: $u-v$

f) $a\cdot\left(\frac{1}{1-a}+\frac{1}{a+1}\right):\left(\frac{1}{1-a}-\frac{1}{a+1}\right)$ **R**: 1

g) $\frac{1}{x+2}+\left(\frac{1}{2-x}+\frac{1}{x+2}-1\right):\frac{x^3+2x^2}{x^2-4x+4}$ **R**: $\frac{4}{(x+2)^2}$

Ex. 2 şi 3 conţin material preluat din ***Grigore Gheba, Exerciţii şi probleme de matematică***, Ed.Did.Ped. 1971, pag. 48-56