Lösung Kap 3 incl DB 4

1 a) $\left(\frac{2m-3n}{3r}\cdot\frac{(2t}{}-\frac{m+4n}{2t}\cdot\frac{(3r}{}\right):\left(\frac{4t-3r}{6n}\cdot\frac{(m}{}-\frac{t+2r}{m}\cdot\frac{(6n}{}\right)$

$\frac{4mt-6nt-3mr-12nr}{6rt}:\frac{6mn}{4mt-3mr-6nt-12nr}=\frac{mn}{rt}$ ②

b) $\frac{5n-15m}{105abc}\cdot\frac{3x+6y}{6a}\cdot\frac{84ab}{nx+2ny-3mx-6my}=$

$\frac{5(n-3m)}{105abc}\cdot\frac{3(x+2y)}{6a}\cdot\frac{84ab}{n(x+2y)-3m(x+2y)}=$

$\frac{(n-3m)(x+2y)\cdot 2}{ac(n-3m)(x+2y)}=\frac{2}{ac}$ ③

2 $\left(\frac{63ax}{126}-\frac{27nx}{42}+\frac{7ab}{14x}-\frac{6n}{2x}\cdot\frac{(3}{}\right):\left(\frac{9}{18x}\cdot\frac{(3x}{}+\frac{2}{8b}\cdot\frac{(6}{}\right)=$

$\left(\frac{63ax-27nx}{42}+\frac{7ab-36n}{6x}\cdot\frac{(3x}{}\right):\left(\frac{27x^2+26^2}{36x}\cdot\frac{(26}{}\right)=$

$\frac{189ax^2-81nx^2+14ab^2-6b^2n}{42x}\cdot\frac{36x}{27x^2+26^2}=$

$\frac{27x^2(7a-3n)+26^2(7a-3n)}{4(27x^2+26^2)}=\frac{(27x^2+26^2)(7a-3n)}{4(27x^2+26^2)}$

$=\frac{7a-3n}{4}$

3 a) $\dfrac{\frac{a}{a+b}+\frac{b}{a-b}}{\frac{a-b}{a-b}} = \dfrac{a^2-ab+ab+b^2}{a^2-b^2} = \dfrac{a^2+b^2}{a^2-b^2}$

(1) $\quad (a-b) \quad (a+b)$

b) $\dfrac{1}{x+\frac{1}{\frac{(x+1)\,1}{x+1}}} = \dfrac{1}{x+\frac{1}{\frac{x^2+x+1}{x+1}}} = \dfrac{1}{x+\frac{x+1}{x^2+x+1}} =$

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

$\dfrac{x^2+x+1}{x^3+x^2+2x+1}$

4 $\left(\dfrac{5b}{3} - \dfrac{175mnxy}{36acd} + \dfrac{12abcd}{5xy} - 7mn\right) : \left(\dfrac{3ab}{5xy} - \dfrac{7mn}{4cd}\right)$

(60… $\quad 5xy \quad$ (36acd $\quad$ (180… $\quad$ (4cd $\quad 5xy$

$180acdxy$

$\dfrac{300abcdxy - 875mnx^2y^2 + 432a^2bc^2d^2 - 1260acdmnxy}{180acdxy}$

$: \left(\dfrac{12abcd-35mnxy}{20cdxy}\right) =$

$\dfrac{(12abcd(25xy+36acd) - 35mnxy(25xy+36acd))\,20cdxy}{180acdxy \quad (12abcd-35mnxy)}$

$= \dfrac{(25xy+36acd)(12abcd-35mnxy)\cdot 20cdxy}{180acdxy\,(12abcd-35mnxy)} = \dfrac{25xy+36acd}{9}$

oder $\dfrac{25xy}{9} + 4acd$