Übungsaufgaben: Rechnen mit Bruchtermen

1. a) $\left(\dfrac{32a^2x^2}{63b^2y^2} : \dfrac{56ax}{81y^2}\right) : \dfrac{36ax}{49b^2}$

   b) $\dfrac{8m^2yz}{11px} : \left(\dfrac{68mrz^2}{77px^2} \cdot \dfrac{28mxy}{51prz}\right)$

2. a) $\dfrac{12ab}{x^2-y^2} : \dfrac{8ac}{x+y}$

   b) $45(p-q)^2 : \dfrac{3(p-q)}{4(p+q)}$

   c) $\dfrac{4a^2-9b^2}{5ab} : (8a-12b)$

   d) $\dfrac{a^2+1}{x^2y-y^3} : \dfrac{a^2-a}{x^3+x^2y}$

   e) $\dfrac{x-y}{x+y} : \dfrac{y-x}{y+x}$

   f) $\dfrac{6(x-5)}{5(x+3)} : \left[9\left(x^2-10x+25\right)\right]$

   g) $\dfrac{p^2-q^2}{a^3-2a^2b+ab^2} : \dfrac{q-p}{ab-b^2}$

   h) $\left(12r^2t-60rst+75s^2t\right) : \dfrac{10r-25s}{2rs}$

   i) $\left(\dfrac{x-2}{x} : \dfrac{x^2-4}{2x^2}\right) \cdot \dfrac{2+x}{2-x}$

   k) $\dfrac{6a^2-6}{a^2+2ab+b^2} : \left(\dfrac{2a-2b}{ab+b} \cdot \dfrac{3ab-3b}{a^2-b^2}\right)$

3. a) $\dfrac{r+s}{2r} : \dfrac{r^2-s^2}{r^2} - \dfrac{1}{2}$

   b) $\dfrac{1}{6x} + \dfrac{3x^2y+xy^2}{4x+4y} : \dfrac{3x^2y^2}{x+y}$

4. a) $\left(\dfrac{5x^4}{8y^2} + 12xy - \dfrac{9y^4}{16x^2}\right) : \dfrac{15x^2}{32y^2}$

   b) $\left(\dfrac{2p+4q}{3p-5q} - \dfrac{2p-4q}{3p+5q}\right) : \dfrac{p^2-4q^2}{9p^2-25q^2}$

   c) $\left(\dfrac{ay+1}{y^2-1} - \dfrac{a}{y-1} + \dfrac{a}{y^2+y}\right) : \dfrac{1}{(y+1)y}$

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

   e) $\left(\dfrac{a}{x} + \dfrac{b}{y}\right) : \left(\dfrac{a}{y} - \dfrac{b}{x}\right)$

   f) $\left(\dfrac{m}{r} - \dfrac{r}{m}\right) : \left(\dfrac{1}{m} - \dfrac{1}{r}\right)$

   g) $\left(1 - \dfrac{b}{a}\right) : \left(\dfrac{a}{b} - 1\right)$

   h) $\left(r^2 - \tfrac{1}{4}\right) : \left(r - \tfrac{1}{2}\right)$

5. a) $\dfrac{\frac{x^2}{yz^2}}{\frac{x^2z}{y^2}}$

   b) $\dfrac{\frac{3r^2}{14s}}{\frac{9r}{7s^2}}$

   c) $\dfrac{\frac{1}{a+b}}{\frac{1}{a-b}}$

   d) $\dfrac{\frac{p+q}{p-q}}{\frac{p^2-q^2}{p^2+q^2}}$

   e) $\dfrac{\frac{x^3-xy^2}{y}}{\frac{x^3-x^2y}{y^2}}$

   f) $\dfrac{\frac{r}{s}+\frac{s}{r}}{\frac{r}{s}-\frac{s}{r}}$

   g) $\dfrac{\frac{a}{2}+\frac{x}{3}}{\frac{a}{4}-\frac{x}{3}}$

   h) $\dfrac{\frac{2a}{3bc}+\frac{5b}{4a^2}}{\frac{2a}{5bc}-\frac{5b}{6ac}}$

   i) $\dfrac{1+\frac{1}{a}}{1-\frac{1}{a}}$

   k) $\dfrac{f-\frac{1}{e}}{f+\frac{1}{e}}$

   l) $\dfrac{a}{b-\frac{c}{d}}$

   m) $\dfrac{\frac{1}{x}+\frac{1}{y}}{\frac{x^2-y^2}{xy}}$

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

   o) $\dfrac{\frac{(a+b)^2}{4ab}-1}{\frac{a}{b}-1}$