

A1

$$(a) \frac{15}{17} + \frac{6}{17} - \frac{13}{17} = \frac{15 + 6 - 13}{17} = \frac{21 - 13}{17} = \underline{\underline{\frac{8}{17}}}$$

$$(b) \frac{35}{76} + \frac{65}{52} - \frac{77}{44} = \frac{5 \cdot 19}{2 \cdot 38} + \frac{5 \cdot 13}{2 \cdot 26} - \frac{7 \cdot 11}{4 \cdot 11}$$

$$= \frac{\cancel{5} \cdot \cancel{19}}{2 \cdot \cancel{2} \cdot \cancel{19}} + \frac{\cancel{5} \cdot \cancel{13}}{2 \cdot \cancel{2} \cdot \cancel{13}} - \frac{\cancel{7} \cdot \cancel{11}}{4 \cdot \cancel{11}} = \frac{5}{4} + \frac{5}{4} - \frac{7}{4}$$

$$= \underline{\underline{\frac{3}{4}}}$$

$$(c) \frac{6}{3a} - \frac{15}{5a} + \frac{35}{7a} - \frac{14}{2a}$$

$$= \frac{\cancel{2} \cdot \cancel{3}}{\cancel{a} \cdot \cancel{3}} - \frac{\cancel{5} \cdot \cancel{3}}{\cancel{5} \cdot \cancel{a}} + \frac{\cancel{5} \cdot \cancel{7}}{\cancel{7} \cdot \cancel{a}} - \frac{\cancel{2} \cdot \cancel{7}}{\cancel{2} \cdot \cancel{a}} = \frac{2}{a} - \frac{3}{a} + \frac{5}{a} - \frac{7}{a}$$

$$= \frac{2 - 3 + 5 - 7}{a} = \underline{\underline{-\frac{3}{a}}}$$

$$(d) \frac{-3}{-2-a} + \frac{4}{a+2} - \frac{a-2}{a^2-4} \rightarrow \text{binom. Formel}$$

$a^2 - 4 = (a-2)(a+2)$

$$= \frac{\cancel{(-1)} \cdot 3}{\cancel{(-1)} \cdot (2+a)} + \frac{4}{a+2} - \frac{\cancel{a-2}}{\cancel{(a-2)}(a+2)}$$

$$= \frac{3}{2+a} + \frac{4}{a+2} - \frac{1}{a+2} = \frac{3+4-1}{a+2} = \underline{\underline{\frac{6}{a+2}}}$$

$$\underline{A2} \quad (a) = \frac{1}{7} + \frac{3}{5} = \frac{1 \cdot 5}{7 \cdot 5} + \frac{3 \cdot 7}{5 \cdot 7}$$

$$= \frac{5 + 21}{35} = \underline{\underline{\frac{26}{35}}}$$

$$(b) \quad \frac{2}{a} + \frac{3}{b} = \frac{2b}{a \cdot b} + \frac{3 \cdot a}{b \cdot a} = \underline{\underline{\frac{2b + 3a}{ab}}}$$

$$(c) \quad \frac{a}{a+b} - \frac{b}{b-a} + \frac{2ab}{\underbrace{a^2 - b^2}_{=(a-b)(a+b)}} \quad (\text{binom. Formel})$$

$$= \frac{a}{a+b} - \frac{b}{(-1)(a-b)} = + \frac{b}{a-b}$$

$$= \frac{a}{a+b} + \frac{b}{a-b} + \frac{2ab}{(a-b)(a+b)}$$

$$= \frac{a \cdot (a-b)}{(a+b) \cdot (a-b)} + \frac{b \cdot (a+b)}{(a-b) \cdot (a+b)} + \frac{2ab}{(a-b) \cdot (a+b)}$$

$$= \frac{a^2 - ab}{(a+b)(a-b)} + \frac{ba + b^2}{(a+b)(a-b)} + \frac{2ab}{(a-b)(a+b)}$$

$$= \frac{a^2 - \cancel{ab} + \cancel{ab} + b^2 + 2ab}{(a-b)(a+b)} = \frac{a^2 + 2ab + b^2}{(a-b)(a+b)}$$

$$\uparrow = \frac{(a+b)^2}{(a-b)(a+b)} = \frac{(a+b) \cancel{(a+b)}}{(a-b) \cancel{(a+b)}}$$

binomische Formel

$$= \frac{(a+b)}{a-b}$$

Aufgabe 3

$$(a) \frac{a}{7} \cdot \frac{3}{a} \cdot \frac{7}{3} = \frac{\cancel{a} \cdot \cancel{3} \cdot \cancel{7}}{\cancel{7} \cdot \cancel{a} \cdot \cancel{3}} = \frac{1}{1} = \underline{\underline{1}}$$

$$(b) \frac{-r^2 s}{p^2 v} \cdot \frac{-p^3 v^2}{r^4 (-s)} = \frac{\cancel{(-1)} \cdot \cancel{r} \cdot \cancel{r} \cdot \cancel{s} \cdot \cancel{(-1)} \cdot \cancel{p} \cdot \cancel{p} \cdot \cancel{p} \cdot \cancel{v} \cdot \cancel{v}}{\cancel{p} \cdot \cancel{p} \cdot \cancel{v} \cdot \cancel{r} \cdot \cancel{r} \cdot \cancel{r} \cdot \cancel{r} \cdot \cancel{(-1)} \cdot \cancel{s}}$$
$$= \frac{(-1) \cdot v \cdot p}{r^2} = - \frac{p \cdot v}{r^2}$$

Mit Potenzregeln:

$$\frac{-r^2 s}{p^2 \cdot v} \cdot \frac{-p^3 v^2}{r^4 (-s)}$$
$$= \frac{-r^{(2-4)} \cdot s^{1-1} \cdot p^{3-2} \cdot v^{2-1} \cdot \cancel{(-1)}}{1 \cdot \cancel{(-1)}}$$
$$= - \frac{r^{-2} \cdot \overset{1}{\underset{0}{s}} \cdot p^1 \cdot v^1}{1} = - \frac{p \cdot v}{r^2}$$