

## Aufgabe 11

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

$$(b) \frac{95}{76} + \frac{65}{52} - \frac{77}{44} = \frac{95}{19 \cdot 4} + \frac{65}{13 \cdot 4} - \frac{77}{11 \cdot 4}$$
$$= \frac{19 \cdot 5}{19 \cdot 4} + \frac{5 \cdot 13}{13 \cdot 4} - \frac{7 \cdot 11}{11 \cdot 4}$$
$$= \frac{5+5-7}{4} = \underline{\underline{\frac{3}{4}}}$$

$$f) \frac{3}{-2-a} + \frac{4}{a+2} - \frac{a-2}{a^2-4}$$
$$= \frac{3}{-(2+a)} + \frac{4}{(a+2)} - \frac{a-2}{(a-2)(a+2)}$$
$$= \frac{-3+4-1}{(a+2)} = \underline{\underline{0}}$$

## Aufgabe 12

$$(a) \frac{1}{7} + \frac{3}{5} = \frac{5}{35} + \frac{3 \cdot 7}{35} = \frac{26}{35}$$

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

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

### Aufgabe 13

$$(d) \frac{x^2-4}{x^2-1} \cdot \frac{x+1}{x-2} = \frac{(x-2)(x+2)}{(x-1)(x+1)} \cdot \frac{(x+1)}{(x-2)}$$
$$= \frac{x+2}{x-1}$$

### Aufgabe 15

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

$$d) \frac{\frac{x-1}{x+1} - \frac{x+1}{x-1}}{\frac{2}{x-1} - \frac{1}{x+1}} = \frac{\frac{(x-1)^2 - (x+1)^2}{x^2-1}}{\frac{2(x+1) - (x-1)}{x^2-1}} = \frac{(x-1)^2 - (x+1)^2}{x^2-1} \cdot \frac{x^2-1}{2(x+1) - (x-1)}$$
$$= \frac{x^2 - 2x + 1 - (x^2 + 2x + 1)}{2x + 2 - x + 1}$$
$$= \frac{-4x}{x+3}$$

$$(e) \frac{\frac{1}{s^2-1} - \frac{1}{s^2}}{2 + \frac{1}{s-1} - \frac{1}{s+1}} = \frac{\frac{s^2}{(s^2-1)s^2} - \frac{(s^2-1)}{s^2(s^2-1)}}{\frac{2(s^2-1)}{s^2-1} + \frac{s+1}{s^2-1} - \frac{s-1}{s^2-1}}$$
$$= \frac{\frac{1}{s^2(s^2-1)}}{\frac{2s^2 - 2 + s + 1 - s + 1}{s^2-1}} = \frac{1}{s^2(s^2-1)} \cdot \frac{(s^2-1)}{2s^2} = \frac{1}{4s^4}$$