Addition und Subtraktion von Bruchtermen
Lösungen

1.

a) $\dfrac{2a}{x^2} + \dfrac{3a+b}{x^2} = \dfrac{5a+b}{x^2}$

b) $\dfrac{2a}{x-y} - \dfrac{3+a}{x-y} = \dfrac{2a-(3+a)}{x-y} = \dfrac{a-3}{x-y}$

c) $\dfrac{(r-5)}{(x-2)^2} - \dfrac{(5-r)}{(x-2)^2} = \dfrac{(r-5)-(5-r)}{(x-2)^2} = \dfrac{r-5-5+r}{(x-2)^2} = \dfrac{2r-10}{(x-2)^2}$

2.

a) $\dfrac{4}{5x} - \dfrac{3}{x^2} =$ N1: $5 \cdot x$; N2: $x \cdot x \Rightarrow$ gem. N: $5 \cdot x \cdot x$;

$\dfrac{4 \cdot x}{5 \cdot x \cdot x} - \dfrac{3 \cdot 5}{5 \cdot x \cdot x} = \dfrac{4x-15}{5x^2}$

b) $\dfrac{5}{ab} + \dfrac{2}{ac} =$ gem. N: $a \cdot b \cdot c = abc$;

$\dfrac{5c}{abc} + \dfrac{2b}{abc} = \dfrac{5c+2b}{abc}$

c) $\dfrac{5}{6b} - \dfrac{b^2+a}{4ab} =$ N1: $2 \cdot 3 \cdot b$; N2: $2 \cdot 2 \cdot a \cdot b$; $\Rightarrow$ gem. N: $2 \cdot 2 \cdot 3 \cdot a \cdot b = 12ab$

$\dfrac{5 \cdot 2a}{12ab} - \dfrac{(b^2+a) \cdot 3}{12ab} = \dfrac{10a-3b^2-3a}{12ab} = \dfrac{7a-3b^2}{12ab}$

3.

a) $\dfrac{2x-3}{x^2-1} + \dfrac{5}{x-1} =$ N1: $(x-1) \cdot (x+1)$; N2: $(x-1)$; $\Rightarrow$ gem. N: $(x-1) \cdot (x+1) = x^2-1$

$\dfrac{2x-3+5 \cdot (x+1)}{x^2-1} = \dfrac{7x+2}{x^2-1}$

b) $\dfrac{4}{a+2} - \dfrac{a+1}{a^2+2a} =$ N1: $(a+2)$; N2: $a \cdot (a+2)$; gem. N: $(a+2) \cdot a = a^2+2a$

$\dfrac{4 \cdot a - (a+1)}{a^2+2a} = \dfrac{4a-a-1}{a^2+2a} = \dfrac{3a-1}{a^2+2a}$

c) $\dfrac{x}{6x-6y} + \dfrac{y}{4x-4y} =$ N1: $6 \cdot (x-y) = 2 \cdot 3 \cdot (x-y)$; N2: $2 \cdot 2 \cdot (x-y)$; $\Rightarrow$ gem. N: $2 \cdot 2 \cdot 3 \cdot (x-y) = 12 \cdot (x-y)$

$\dfrac{x \cdot 2 + y \cdot 3}{12 \cdot (x-y)} = \dfrac{2x+3y}{12 \cdot (x-y)}$

d) $\dfrac{5}{a^2-b^2} - \dfrac{2}{a^2+2ab+b^2} =$ N1: $(a-b) \cdot (a+b)$; N2: $(a+b) \cdot (a+b)$; $\Rightarrow$ gem. N: $(a+b) \cdot (a+b) \cdot (a-b)$

$\dfrac{5 \cdot (a+b) - 2 \cdot (a-b)}{(a+b)(a+b)(a-b)} = \dfrac{5a+5b-2a+2b}{(a+b)(a+b)(a-b)} = \dfrac{3a+7b}{(a+b)(a+b)(a-b)}$