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a) $\frac{3a}{4b} = \frac{63a^2}{84ab}$

b) $\frac{a}{a+2} = \frac{3a}{3a+6}$

c) $\frac{u+v}{u} = \frac{(u+v)^2}{u^2+uv}$

d) $\frac{5(b+3)}{a(b-3)} = \frac{5a(b^2-9)}{a^2(b-3)^2}$

e) $\frac{2px}{3p(x-1)} = \frac{2p^2x(x+1)}{3p^2x^2-3p^2}$

2

Kürze:

a) $\frac{-3pq}{18q^2} = -\frac{p}{6q}$

c) $\frac{10(3+b)}{15(b+3)} = \frac{2}{3}$

b) $\frac{52ab^3}{-39a^3b} = -\frac{4b^2}{3a^2}$

d) $\frac{18a(a-3b)^2}{24a^2b(a-3b)} = \frac{3(a-3b)}{4ab}$

3

a) $\frac{x^2-xy}{x^2+xy} = \frac{x-y}{x+y}$

d) $\frac{a^2-4c^2}{4c-2a} = -\frac{a+2c}{2}$

b) $\frac{3yx^2-5x}{5y-3xy} = -\frac{x}{y}$

e) $\frac{6q-4p}{4p^2-9q^2} = -\frac{2}{2p+3q}$

c) $\frac{x^2-xy}{y^2-x^2} = -\frac{x}{x+y}$

1

$$a) \frac{2}{a^2} + \frac{5}{b^2} - \frac{3}{ab} = \frac{5a^2 - 3ab + 2b^2}{a^2b^2}$$

$$b) \frac{2s}{3r^2} - \frac{7s}{2r} - \frac{16}{5s} = \frac{20s^2 - 105rs^2 - 96r^2}{30r^2s}$$

$$c) \frac{1}{t^2} - \frac{2}{tx} + \frac{1}{x^2} = \frac{x^2 - 2tx + t^2}{t^2x^2} = \frac{(x-t)^2}{t^2x^2}$$

$$d) \frac{3}{a^2x} - \frac{2}{ax^2} + \frac{1}{2a} = \frac{6x - 4a + ax^2}{2a^2x^2}$$

2

$$a) \frac{1}{a+b} - \frac{1}{a-b} = -\frac{2b}{a^2-b^2}$$

$$b) \frac{x}{x-y} - 1 = \frac{y}{x-y}$$

$$c) \frac{2x}{x-1} + \frac{3}{x+1} - \frac{1}{2} = \frac{3x^2 + 10x - 5}{2(x+1)(x-1)}$$

$$d) \frac{2}{a+1} - \frac{3}{a-1} - \frac{4}{a+2} = -\frac{5a^2 + 7a + 6}{(a+1)(a-1)(a+2)}$$

3

Vereinfache und kürze soweit als möglich:

$$\frac{a+1}{a-1} - \frac{a^2}{a^2-1} - \frac{1}{2a+2} = \frac{3(a+1)}{2(a+1)(a-1)} = \frac{3}{2(a-1)}$$

1 $\frac{a(x+y)}{4b^2} \cdot \frac{10b}{a^2x+a^2y} = \frac{5}{2ab}$

2 $\frac{(u+v)^2}{2(u-v)} \cdot \frac{4u-4v}{u^2+v^2} = \frac{2(u+v)^2}{u^2+v^2}$

3 $\frac{6xy}{7z^2} : \frac{9y^3}{35xz^2} = \frac{10x^2}{3y^2}$

4 $\frac{5x}{7x+7y} \cdot (x^2 + 2xy + y^2) = \frac{5x(x+y)}{7}$

5 $9(u-v)^2 : \frac{u-v}{4u+4v} = 36(u^2 - v^2)$

6 $\frac{14ab^2}{5a-5b} \cdot \frac{15(b-a)}{7a^2b^2} = -\frac{6}{a}$

7 $\frac{16a^2b}{a-b^2} : \frac{24ab^2}{b+a} = \frac{2a}{3b(a-b)}$

8 $\frac{a^2(a^2-4)}{a^2+2a} : (a^2-2a) = 1$

9 $\frac{2n+2mn^2+n^3}{m^2} \cdot \frac{n^2}{m^2+mn} = \frac{n^3(m+n)}{m^3}$

10 Kürze folgenden Bruch soweit als möglich:

$$\frac{x^5 - 20x^3 + 64x}{(x^2 - 6x + 8)(x^3 + 5x^2 + 6x)} = \frac{x(x+4)(x-4)(x+2)(x-2)}{(x-2)(x-4)x(x+2)(x+3)} = \frac{x+4}{x+3}$$
