

### Vermischte Aufgaben zur Wiederholung

#### I. Rechenarten

1.  $9,6a - [2a + (a - 1,6a)] + [a - (1,6a + 2a)]$
2.  $49y + [3y - (113y - 38y)] - [y - (38y - 113y)] + 100y$
3.  $x - (y + z) - (x - y) + (z - x)$
4.  $39a - [22b - (3c - 4a)] + [b - (33c - 22a)] - (a - c + b)$
5.  $[(1,5b - 2,6y) - (3,4a - 4,2x)] - [(3,6a + 1,4y) - (4,5b - 2,8x)]$
6.  $(3 + a) \cdot (b + c) - (2 - b) \cdot (4 - a) - (4 - c) \cdot (a + b)$
7.  $7a(4x + 3y - 5z) - 3a(5x - 4y + 6z)$
8.  $(7b - 2a) \cdot (5y + 6x) + (3x + 8a) \cdot (2y - 5b)$
9.  $(3x + 1) \cdot 5b \cdot (2y - 1) \cdot (4a - 1)$
10.  $(a + 8) \cdot (a - 4) - (a - 3) \cdot (a + 6) + (a - 3) \cdot (a - 5)$
11.  $(x^2 + 4) \cdot (x^2 - 3) - (x + 5) \cdot (x^2 - 6) - (x^2 - 2) \cdot (x + 7)$
12.  $(a + b + 3) \cdot [(2a - b + 4) - (2a - b + 2)]$
13.  $[3a^2 + (2a^2 - a^2 + a - 4)] \cdot (2a - 3) - (2a^2 + 5a - 3) \cdot [a^2 - (a^2 + a - 4)]$
14.  $(3x - y) \cdot \left(\frac{4}{3}x - \frac{1}{2}z\right) \cdot \left(\frac{2}{5}y - \frac{5}{6}x - \frac{2}{3}z\right)$
15.  $(2a + 1) \cdot [4a(a - 2) - (a - 4)(a + 2)]$
16.  $(4x - 6y)(4x + 6y) [(4x + 6y)^2 - (4x - 6y)^2]$
17.  $(2x - y + 9) \cdot [(8x - 4y - 1) - (7y + 3x - 5)]$
18.  $(4a^2 - 3b^2 - 6) \cdot [(2a^2 + 4b^2 - 3) + (6a^2 - 5b^2 - 7)]$
19.  $(2x - 3)[3x^2 + (2x^2 - x^2 + x - 4)] - [x^2 - (x^2 + 4x - 3)] \cdot (x^2 + 4x - 3)$
20.  $\left(\frac{8x}{6} - \frac{8b}{3}\right) \cdot \left(\frac{3a}{4} - \frac{3y}{8}\right)$
21.  $\left(\frac{3x}{4y} - \frac{7x}{2c}\right) \cdot 3cy$
22.  $18ab \cdot \left(\frac{5}{12a} - \frac{9}{10b} + \frac{4}{15}\right)$
23.  $60abc \cdot \left(\frac{3x}{5a} - \frac{x}{2b} + \frac{5x}{3c}\right)$
24.  $\left(\frac{x}{2} - \frac{2y}{3}\right) \cdot \left(\frac{2x}{5} + \frac{y}{4} + \frac{3}{2}\right)$
25.  $\left(\frac{a}{5} - 1\right) \cdot \left(\frac{a}{5} + 1\right)$
26.  $\frac{2b - 1}{b + 2} - \frac{2b - 5}{10b + 20} - \frac{8b - 7}{6b + 12}$
27.  $\frac{8(3x + 1)}{10} - \frac{2(7x - 5)}{3} + \frac{5(2x - 3)}{4}$
28.  $\frac{a - 1}{12} - \frac{3a + 5 - 4b}{8} + \frac{4 - 3b + 2a}{6}$
29.  $\frac{11x - 5y}{12} - \frac{3x - 5y}{6} + \frac{10x - 14y}{8}$
30.  $\left(\frac{4x - 11}{11x^2} + \frac{9x + 3}{9x}\right) \cdot \left(\frac{x - 2}{2x^2} + \frac{3(12x - 1)}{22x}\right)$
31.  $\frac{2}{3a} + \frac{3}{4(a - b)} - \frac{1\frac{1}{2}}{a + b} - \frac{3\frac{1}{2}}{a^2 - b^2}$
32.  $\frac{x}{x + y} + \frac{1}{x} + \frac{2y}{2x - 2y} - \frac{x^2}{x^2 - y^2}$
33.  $\frac{6}{4a} - \frac{4}{3a - 3b} - \frac{4}{3a - 3b} - \frac{8a}{3a^2 - 3b^2}$
34.  $\frac{6 - 4x}{2x^2 + 14x + 24} + \frac{x - 4}{x + 4} + \frac{x - 3}{x + 3}$
35.  $\frac{6}{2a + 2\sqrt{2}} + \frac{8}{16a^2 + 25 + 40a} + \frac{16}{5 + 4a}$

36.  $\left(\frac{a}{4} - \frac{b}{2}\right) \cdot \left(\frac{4}{a} + \frac{2}{b}\right)$
37.  $\frac{(1+a)^2}{(a+1)^2} + \frac{(a-1)^2}{(1-a)^2}$
38.  $\frac{20a-2}{8a^2-2} - \frac{1+2a}{2a-1} + \frac{2a-1}{2a+1}$
39.  $\frac{3a^2-ax}{3x^2-3a^2} - \frac{x-a}{3x+3a} + \frac{2x-a}{2(x-a)}$
40.  $\frac{10x-15y}{5x-4y} - \frac{4x^2-23xy-15y^2}{25x^2-16y^2} - \frac{8x+12y}{5x+4y}$
41.  $\frac{7xy+x^2}{3x-4y} - \frac{3}{5} - \frac{10x-28y}{60} - \frac{xy}{3x-4y} - \frac{10xy+8y^2}{12x-16y}$
42.  $\frac{2x-8}{4x-2} - \frac{5x^2-20}{6x^2-x-1} - \frac{5+2x}{1+3x}$
43.  $\frac{b+2a}{4(2a-b)} - \frac{2a-b}{3(b+2a)} - \frac{2ab}{4a^2-b^2}$
44.  $\frac{8a-26}{4a^2-4a} - \frac{a-3}{a^2-1} - \frac{2a-2}{2a^2+2a}$
45.  $\frac{x^2+3xy}{x^2y-y^2} - \frac{xy}{xy-y^2} - \frac{x-y}{xy+y^2} + \frac{x+y}{x^2-xy}$
46.  $\frac{1}{x} \cdot \frac{xyz}{x-y} \cdot \frac{x-y}{yz}$
47.  $\frac{a+b}{5x+5y} \cdot \frac{4x+4y}{a-b} \cdot 20$
48.  $(4x^2-9y^2) \cdot \frac{2x+3y}{2x-3y}$
49.  $28(a+b)^2 \cdot \frac{10(a-b)}{14(a+b)}$
50.  $42x^2y^2 \cdot \left(\frac{4z}{7x^2y} + \frac{3z}{2xy^2} - \frac{11z}{6xy}\right)$
51.  $48a^2 \cdot \left(\frac{7b^2}{12a^2} - \frac{11b}{18a} - 2\right)$
52.  $6(18a^2-8b^2) \cdot \left(\frac{2}{9a-6b} - \frac{2}{12a-8b} - \frac{3}{3a+2b}\right)$
53.  $\left(\frac{a}{4a-4b} - \frac{b}{3a-3b} + \frac{b}{(a+b) \cdot (a-b)}\right) \cdot 12(a^2-b^2)$

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I. Rechenarten

1.  $5,6a$
2.  $y$
3.  $-x$
4.  $56a - 22b - 29c$
5.  $-7a + 6b + 1,4x - 4y$
6.  $-2a + 2ac + 3b + bc + 3c - 8$
7.  $13ax + 33ay - 53az$
8.  $-40ab - 12ax + 6ay + 27bx + 35by + 6xy$
9.  $-20ab - 60abx + 120abxy + 40aby + 5b + 15bx - 30bxy - 10by$
10.  $a^2 - 7a + 1$
11.  $-6x^4 - 3x^3 - 3x^2 + 8x + 32$
12.  $2a + 2b + 6$
13.  $4a^5 - 8a^4 + 2a^3 - a^2 - 34a + 24$
14.  $-\frac{10}{3}x^3 + \frac{122}{45}x^2y - \frac{17}{12}x^2z + xz^2 - \frac{23}{180}xyz - \frac{8}{15}xy^2 + \frac{1}{5}y^2z - \frac{1}{3}yz^2$
15.  $6a^3 - 9a^2 + 10a + 8$
16.  $1536a^2y - 3456ay^2$
17.  $10x^2 + 53x - 27xy + 11y^2 - 103y + 36$
18.  $32a^4 - 88a^3 - 28a^2b^3 + 3b^4 + 36b^3 + 60$
19.  $5x^5 - 8x^4 + 2x^3 - 30x + 24$
20.  $ax - \frac{1}{2}xy + 2ab - by$
21.  $2\frac{1}{4}cx - 10\frac{1}{2}xy$
22.  $-16\frac{1}{6}a + 4\frac{4}{6}ab + 7\frac{1}{2}b$
23.  $100abx - 30acx + 36bcx$
24.  $\frac{1}{5}x^3 - \frac{1}{6}y^3 + \frac{3}{4}x - y - \frac{17}{120}xy$
25.  $\frac{a^2}{25} - 1$
26.  $\frac{7b + 10}{15(b + 2)}$
27.  $\frac{14x + 23}{60}$
28.  $\frac{a - 1}{24}$
29.  $\frac{5x - 4y}{3}$
30.  $\frac{-21x + 11}{33x}$
31.  $\frac{a^2 - 44a + 25ab - 8b^2}{12a(a^2 - b^2)}$
32.  $\frac{x^2 - y^2 + xy^2}{x(x^2 - y^2)}$
33.  $\frac{-23a^3 - 16ab - 9b^3}{6a^3 - 6ab^2}$
34.  $\frac{3}{(x + 4) \cdot (x + 3)}$
35.  $\frac{112a + 148}{(4a + 5)^2}$
36.  $\frac{a^2 - 4b^2}{2ab}$
37.  $2$
38.  $\frac{1}{2a + 1}$
39.  $\frac{a^2 + 5ax + 4x^2}{6(x - a) \cdot (x + a)}$
40.  $\frac{6x^2 - 40xy + 3y^2}{(5x - 4y)(5x + 4y)}$
41.  $\frac{x + 29y}{30}$
42.  $\frac{-6x^2 - 19x + 21}{(2x - 1)(3x + 1)}$
43.  $\frac{-4a^2 + 4ab - b^2}{12(2a + b)(2a - b)}$
44.  $\frac{a - 15}{2a(a - 1)(a + 1)} = \frac{a - 15}{2a^3 - 2a}$
45.  $\frac{6x^2 + xy + y^2}{x(x + y)(x - y)}$
46.  $1$
47.  $\frac{16(a + b)}{a - b}$
48.  $(2x + 3y)^2 = 4x^2 + 12xy + 9y^2$
49.  $20(a^2 - b^2)$
50.  $24yz + 63xz - 77xyz$
51.  $28b^2 - \frac{88}{3}ab - 96a^2$
52.  $-102a + 76b$
53.  $3a^2 - ab - 4b^2 + 72$

