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Termumformungen

$a^{-3} \cdot a^{8} =$

$3c \cdot 5c^{3} - 6c^{2} \cdot 2c^{2} =$

$8x - (5m - 3y) - 2n =$

$5x + [2a - (7 + 6y)] =$

$-5(x - 3) =$

$3a + (11x - 9y) - (4ax + 7ay) =$

$4a(2x - 5y) =$

$(8 + x)(3 + y) =$

$(3a - 7)(4 + 2b) =$

$5x(4 + y) + (x - y)^{2} =$

$-4a(-2a + x - 1) - (3 - a)(-5a - x) =$

$2a(8bc + 2b) - 3bc(5a - 3) - b(4a + 9c) =$

$$\frac{8\,a^{2}x^{3}\cdot 3\,a\,x + 2\,a^{3}\cdot 4\,x^{4}}{2\,a\,x^{2}\cdot 7a\,x + 10\,a^{2}x^{3}} =$$

$$\frac{3\,a^{3}\cdot 8\,a\,x^{2} + 2\,a^{3}x^{-3}\cdot 6\,a\,x^{5} - 7\,a^{7}x^{2}\cdot 4\,a^{-3}}{2\,x\,a^{2}\cdot 4\,a\,x} =$$

Klammern Sie den angegebenen Faktor aus!

$54a^{4}b + 27a^{2}b^{2} - 108a^{3}b = 3a^{2}($ $)$

$-31x^{2}y^{2} + 45x^{3}y^{2} - 24x^{2}y^{3} = -x^{2}y^{2}($ $)$

$56x^{4}y + 24x^{2}y^{2} - 104x^{3}y = 4x^{2}($ $)$

$-25a^{2}b^{2} + 42a^{3}b^{2} - 37a^{2}b^{3} = -a^{2}b^{2}($ $)$

Klammern Sie möglichst viel aus!

$6x^{2} + 9a + 15xy =$

$45xyz - 36xz + 81yz =$

$57x^{2}y^{3} + 95x^{4}y + 19x^{3}y^{2} =$

$1{,}3abc + 3{,}9acy + 2{,}6acx =$

$-17x^{2}yz - 34xy^{2}z - 51xyz^{2} =$

$54x^{4}y^{2} + 36x^{2}y^{4} + 99x^{3}y^{3} =$

$72a^{5}b^{2} - 54a^{4}b^{3} + 90a^{3}b^{4} =$

$28x^{4}y^{2} + 63x^{2}y^{4} + 84x^{3}y^{3} =$

Nutzen Sie die binomische Formel zum „Ausklammern“!

$49a^2 - 70ax + 25x^2 =$ $36a^2 - 96ax + 64x^2 =$

Klammern Sie aus und kürzen Sie!

$$\frac{24\,x^3y^2 + 42\,x^2y\,z^2 - 33\,x^4z}{18\,x^2y + 30\,xy^2} =$$

$$\frac{25\,x^3 - 15\,x^2y + 20\,x^2z}{35\,a\,x - 21\,a\,y + 28\,a\,z} =$$

$$\frac{48\,x^2y^4 + 72\,x^3y^3 - 40\,x^4y^3}{12\,x^3y^3 - 16\,x^2y^4} =$$

$$\frac{81\,x^2 + 72\,xy + 16\,y^2}{27\,x + 12\,y} =$$

$$\frac{45\,x^2y^4 + 72\,x^3y^3 - 18\,x^4y^3}{12\,x^3y^3 - 9\,x^2y^4} =$$

$$\frac{16\,x^2 + 24\,xy + 9\,y^2}{28\,x + 21\,y} =$$

Vereinfachen Sie so weit wie möglich!

$(12x - 2y)^2 + (4x + 6y)^2 + (3x - 7y)(3x + 7y) + (3y + 13x)(3y - 13x) =$

$(12x - 5y)^2 + (6x + 10y)^2 + (4x + 15y)(4x - 15y) + (10y - 14x)(10y + 14x) =$

$(2x - 2y)^2 + (y + x)(y - x) + (2x - 3y)(x - y) + 2y(5x - 4y) =$

$7x(-4y + 5x) - [4(9x^2 - (3xy + 5)) - 2y(9x - 7y)] - (20 - 14y^2) =$

$(a - b)^2 + (a + b)(a - b) - a(2a - b) + (x^2 + 3ab) - (2ab + x^2 - 1) =$

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

$$\frac{a^2 + 2ax + x^2}{a^2 - x^2} - \frac{a^2 - x^2}{a^2 - 2ax + x^2} =$$

$(4x + 4)^2 + (5x - 3)^2 + (5 + 9x)(5 - 9x) + (2x + 7)(2x - 7) - (x + 1)^2 + (6x)^2 =$

Lösungen

$a^{-3} \cdot a^{8} = a^{5}$ $3c \cdot 5c^{3} - 6c^{2} \cdot 2c^{2} = 3c^{4}$

$8x - (5m - 3y) - 2n = 8x-5m+3y-2n$ $5x + [2a - (7 + 6y)] = 5x+2a-7-6y$

$-5(x - 3) = -5x+15$ $3a + (11x - 9y) - (4ax + 7ay) = 3a+11x-9y-4ax-7ay$

$4a(2x - 5y) = 8ax-20ay$ $(8 + x)(3 + y) = 24+3x+8y+xy$

$(3a - 7)(4 + 2b) = 12a+6ab-28-14b$ $5x(4 + y) + (x - y)^{2} = 20x+3xy+x^{2}+y^{2}$

$-4a(-2a + x - 1) - (3 - a)(-5a - x) = 3a^{2}-5ax+19a+3x$

$2a(8bc + 2b) - 3bc(5a - 3) - b(4a + 9c) = abc$

$$\frac{8\,a^{2}x^{3}\cdot 3\,a\,x + 2\,a^{3}\cdot 4\,x^{4}}{2\,a\,x^{2}\cdot 7a\,x + 10\,a^{2}x^{3}} = \frac{4}{3}\,ax$$

$$\frac{3\,a^{3}\cdot 8\,a\,x^{2} + 2\,a^{3}x^{-3}\cdot 6\,a\,x^{5} - 7\,a^{7}x^{2}\cdot 4\,a^{-3}}{2\,x\,a^{2}\cdot 4\,a\,x} = a$$

Klammern Sie den angegebenen Faktor aus!

$54a^{4}b + 27a^{2}b^{2} - 108a^{3}b = 3a^{2}$**($18a^{2}b+9b^{2}-36ab$)**

$-31x^{2}y^{2} + 45x^{3}y^{2} - 24x^{2}y^{3} = -x^{2}y^{2}$**($31-45x+24y$)**

$56x^{4}y + 24x^{2}y^{2} - 104x^{3}y = 4x^{2}$**($14x^{2}y+6y^{2}-26xy$)**

$-25a^{2}b^{2} + 42a^{3}b^{2} - 37a^{2}b^{3} = -a^{2}b^{2}$**($25-42a+37b$)**

Klammern Sie möglichst viel aus!

$6x^{2} + 9a + 15xy = 3(2x^{2}+3a+5xy)$

$45xyz - 36xz + 81yz = 9z(5xy-4x+9y)$

$57x^{2}y^{3} + 95x^{4}y + 19x^{3}y^{2} = 19x^{2}y(3y^{2}+5x^{2}+xy)$

$1{,}3abc + 3{,}9acy + 2{,}6acx = 1{,}3ac(b+3y+2x)$

$-17x^{2}yz - 34xy^{2}z - 51xyz^{2} = -17xyz(x+2y+3z)$

$54x^{4}y^{2} + 36x^{2}y^{4} + 99x^{3}y^{3} = 9x^{2}y^{2}(6x^{2}+4y^{2}+11xy)$

$72a^{5}b^{2} - 54a^{4}b^{3} + 90a^{3}b^{4} = 18a^{3}b^{2}(4a^{2}-3ab+5b^{2})$

$28x^{4}y^{2} + 63x^{2}y^{4} + 84x^{3}y^{3} = 7x^{2}y^{2}(4x^{2}+9y^{2}+12xy)$ [$= 7x^{2}y^{2}(2x+3y)^{2}$]

Nutzen Sie die binomische Formel zum „Ausklammern“!

$49a^2 - 70ax + 25x^2 = \underline{(7a-5x)^2}$ $36a^2 - 96ax + 64x^2 = \underline{(6a-8x)^2}$

Klammern Sie aus und kürzen Sie!

$$\frac{24\,x^3y^2 + 42\,x^2y\,z^2 - 33\,x^4z}{18\,x^2y + 30\,xy^2} = \frac{3x^2(8xy^2+14yz^2-11x^2z)}{6xy(3x+5y)} = \frac{x(8xy^2+14yz^2-11x^2z)}{2y(3x+5y)}$$

$$\frac{25\,x^3 - 15\,x^2y + 20\,x^2z}{35\,a\,x - 21\,a\,y + 28\,a\,z} = \frac{5x^2(5\,x - 3\,y + 4\,z)}{7a\,(5x - 3y + 4z)} = \frac{5x^2}{7a}$$

$$\frac{48\,x^2y^4 + 72\,x^3y^3 - 40\,x^4y^3}{12\,x^3y^3 - 16\,x^2y^4} = \frac{8x^2y^3(6\,y + 9x - 5x^2)}{4x^2y^3(3x - 4y)} = \frac{2(6\,y + 9x - 5x^2)}{3x - 4y}$$

$$\frac{81\,x^2 + 72\,xy + 16\,y^2}{27\,x + 12\,y} = \frac{(9x + 4y)^2}{3(9x + 4y)} = \frac{9x + 4y}{3}$$

$$\frac{45\,x^2y^4 + 72\,x^3y^3 - 18\,x^4y^3}{12\,x^3y^3 - 9\,x^2y^4} = \frac{9x^2y^3(5\,y + 8x - 2x^2)}{3x^2y^3(4x - 3y)} = \frac{3(5\,y + 8x - 2x^2)}{4x - 3y}$$

$$\frac{16x^2 + 24xy + 9y^2}{28x + 21y} = \frac{(4x + 3y)^2}{7(4x + 3y)} = \frac{4x + 3y}{7}$$

Vereinfachen Sie so weit wie möglich!

$(12x - 2y)^2 + (4x + 6y)^2 + (3x - 7y)(3x + 7y) + (3y + 13x)(3y - 13x) = \underline{0}$

$(12x - 5y)^2 + (6x + 10y)^2 + (4x + 15y)(4x - 15y) + (10y - 14x)(10y + 14x) = \underline{0}$

$(2x - 2y)^2 + (y + x)(y - x) + (2x - 3y)(x - y) + 2y(5x - 4y) = \underline{5x^2-3xy}$

$7x(-4y + 5x) - [4(9x^2 - (3xy + 5)) - 2y(9x - 7y)] - (20 - 14y^2) = \underline{-x^2+2xy}$

$(a - b)^2 + (a + b)(a - b) - a(2a - b) + (x^2 + 3ab) - (2ab + x^2 - 1) = \underline{1}$

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

$$\frac{a^2 + 2ax + x^2}{a^2 - x^2} - \frac{a^2 - x^2}{a^2 - 2ax + x^2} = \frac{(a+x)^2}{(a+x)(a-x)} - \frac{(a+x)(a-x)}{(a-x)^2} = \underline{0}$$

$(4x + 4)^2 + (5x - 3)^2 + (5 + 7x)(5 - 7x) + (3x + 7)(3x - 7) - (x + 1)^2 = \underline{0}$