

Schreibe mit positiven Exponenten:

$$1. (2c)^{-3} = \frac{1}{(2c)^3} = \frac{1}{8c^3}$$

$$2. x \cdot y^{-2} = x \cdot \frac{1}{y^2}$$

$$3. 2 : c^{-4} = 2 : \frac{1}{c^4} = 2c^4$$

$$4. \left(\frac{x-y}{x+y}\right)^{-2} = \left(\frac{x+y}{x-y}\right)^2$$

$$5. 3 : (-a)^{-3} = 3 : \left(\frac{1}{-a}\right)^3 = 3 \cdot \left(-\frac{a}{1}\right)^3 = -3 \cdot a^3$$

$$6. \frac{c^{-5}}{d^{-5}} = \frac{d^5}{c^5}$$

$$7. \left(-\frac{v}{w}\right)^{-4} = \left(-\frac{w}{v}\right)^4 = \left(\frac{w}{v}\right)^4 = \frac{w^4}{v^4}$$

Schreibe ohne Nenner:

$$1. \frac{7a}{(a-b)^2} = 7a \cdot (a-b)^{-2}$$

$$2. \frac{4}{x^{-3}} + \frac{1}{x^3} = 4x^3 + x^{-3}$$

$$3. \frac{1}{c^{k+1}} = c^{-k-1}$$

$$4. \frac{2b}{u^{-2k}(x-y)^{2m-1}} = 2bu^{2k}(x-y)^{1-2m}$$

$$5. \frac{u}{x^{n-1}} - \frac{v}{x^{1-2n}} = ux^{1-n} - vx^{2n-1}$$

Berechne:

$$1. z^{n-2} \cdot z^{2-n} = z^{(n-2)+(2-n)} = z^0 = 1$$

$$2. -z^{-k} \cdot z^{-k-2} = -z^{-k+(-k-2)} = -z^{-2k-2} = -z^{-2(k+1)}$$

$$3. y^{-2} : y^{4-3k} = y^{-2-(4-3k)} = y^{3k-6}$$

$$4. (-a)^{1-2n} \cdot a^{2n} = -a^{1-2n} \cdot a^{2n} = -a^{1-2n+2n} = -a$$

$$5. 3e:(5e^{3k+2}) = 0,6e^{1-(3k+2)} = 0,6e^{-(1+3k)}$$

Berechne (wie immer OHNE Taschenrechner!):

1.  $8u^{-3} \cdot 0,25v^{-3} = 2(uv)^{-3}$

2.  $(-4r)^{-2n} \cdot s^{-2n} = (-4rs)^{-2n} = (4rs)^{-2n}$        $-2n$  ist ein gerader Exponent!

3.  $(a-b)^{-m} \cdot (a+b)^{-m} = [(a-b)(a+b)]^{-m} = (a^2 - b^2)^{-m}$

4.  $(3x+4y)^{3-4n} \cdot (4y-3x)^{3-4n} = [(4y+3x)(4y-3x)]^{3-4n} = (16y^2 - 9x^2)^{3-4n}$

Berechne (wie immer OHNE Taschenrechner!):

$$1. (xy)^{-k} : \left(\frac{x}{y}\right)^{-k} = (xy)^{-k} \cdot \left(\frac{y}{x}\right)^{-k} = \left(xy \cdot \frac{y}{x}\right)^{-k} = (y^2)^{-k} = y^{-2k}$$

$$2. (3u)^{-3} : (0,6u)^{-3} = (3^{-3}u^{-3}) : (0,6^{-3}u^{-3}) = (3:0,6)^{-3} = 5^{-3} = \frac{1}{5^3} = \frac{1}{125} = 0,008$$

$$3. \frac{(15x^2 - 6x)^{-3n}}{(5x-2)^{-3n}} = \left(\frac{15x^2 - 6x}{5x-2}\right)^{-3n} = \left(\frac{3x(5x-2)}{5x-2}\right)^{-3n} = (3x)^{-3n}$$

$$4. \frac{(b-a)^{-2k}}{(a^2 - b^2)^{-2k}} = \left(\frac{b-a}{a^2 - b^2}\right)^{-2k} = \left(\frac{-(a-b)}{(a-b)(a+b)}\right)^{-2k} = \left(\frac{-1}{a+b}\right)^{-2k} = \left(\frac{a+b}{-1}\right)^{2k} = (a+b)^{2k}$$