

Arithmetik – Rechnen mit Potenzen und Logarithmen

Lösungsblatt

Rechnen mit Potenzen:

$3^4 \cdot 3^3 = 3^7 = 2187$ (\rightarrow TR: $3 \rightarrow y^x \rightarrow 7 = 2187$)

$4^5 \cdot 4^2 = 4^7 = 16384$	$6^4 : 6^2 = 6^2 = 36$	$2^3 \cdot 2^2 = 2^5 = 32$	$2^2 \cdot 2^{-2} = 2^0 = 1$
$4^5 : 4^2 = 4^3 = 64$	$6^4 \cdot 6^2 = 6^6 = 46656$	$2^3 : 2^2 = 2^1 = 2$	$2^2 : 2^{-2} = 2^4 = 16$
$(4^5)^2 = 4^{10} = 1048576$	$(6^4)^2 = 6^8 = 1679616$	$(2^3)^2 = 2^6 = 64$	$7^8 \cdot 7^{-8} = 7^0 = 1$
$(-16)^2 : (-4)^2 =$	$(-4)^3 = -64$	$5^7 : 5^4 = 5^3 = 125$	$18^2 : 9^2 =$
$+256 : +16 = +272$	$(-4)^4 = +256$	$5^3 \cdot 5^2 = 5^5 = 3125$	$(2^2 \cdot 9^2) : 9^2 = 2^2 = 4$
$15^2 : 5^2 =$	$64^2 : 16^2 =$	$81^2 : 27^2 =$	$36^2 : 12^2 =$
$(3^2 \cdot 5^2) : 5^2 = 3^2 = 9$	$(4^2 \cdot 16^2) : 16^2 = 4^2 = 16$	$(3^2 \cdot 27^2) : 27^2 = 3^2 = 9$	$(3^2 \cdot 12^2) : 12^2 = 3^2 = 9$
$5^{-2} = \frac{1}{5^2} = \frac{1}{25}$	$3^{-4} = \frac{1}{3^4} = \frac{1}{81}$	$10^{-2} = \frac{1}{10^2} = \frac{1}{100}$	$2^{-2} \cdot 2^{-2} = 2^{-4} = \frac{1}{2^4} = \frac{1}{16}$
$4^{-3} = \frac{1}{4^3} = \frac{1}{64}$	$2^{-8} = \frac{1}{2^8} = \frac{1}{256}$	$10^{-3} = \frac{1}{10^3} = \frac{1}{1000}$	$5^{-2} \cdot 5^{-3} = 5^{-5} = \frac{1}{5^5} = \frac{1}{3125}$
$4^3 : (-2)^3 =$	$15^2 : (-5)^2 =$	$(-6)^3 : (-2)^3 =$	$16^3 : (-8)^2 =$
$64 : (-8) = -8$	$225 : (+25) = 9$	$(-216) : (-8) = +27$	$4096 : (+64) = 64$
$x^3 \cdot x^2 = x^5$	$4a^3 \cdot a^{-2} = \frac{4a^3}{1} \cdot \frac{1}{a^2} = 4a$	$(3b)^3 \cdot (6b)^{-2} = \frac{27b^3}{1} \cdot \frac{1}{36b^2}$	$15r^3 \cdot (5r)^{-2} = \frac{15r^3}{1} \cdot \frac{1}{25r^2}$
$(2x^2)^2 = 4x^4$	$(-r)^2 \cdot (s)^3 = -r^2 s^3$	$= \frac{3b}{4}$	$= \frac{3r}{5}$
$(2x^2)^3 = 8x^6$			

Rechnen mit Logarithmen:

${}^2\log 256 = (\rightarrow$ TR: $\log 256 \rightarrow : \rightarrow \log 2 = 8$ >>> weil $2^8 = 256$)

${}^3\log 729 = 6 \rightarrow 3^6 = 729$	${}^8\log 32768 = 5 \rightarrow 8^5 = 32768$	${}^{10}\log 1000 = 3 \rightarrow 10^3 = 1000$
${}^5\log 625 = 4 \rightarrow 5^4 = 625$	${}^4\log 65536 = 8 \rightarrow 4^8 = 65536$	${}^9\log 6561 = 4 \rightarrow 9^4 = 6561$
${}^7\log 343 = 7 \rightarrow 7^3 = 343$	${}^6\log 1296 = 4 \rightarrow 6^4 = 1296$	${}^2\log 1024 = 10 \rightarrow 2^{10} = 1024$