

les Puissances



1

$$a^n = \underbrace{a \times a \times \dots \times a}_{= n \text{ fois}}$$

ex :

- $2^2 = 2 \times 2 = 4$
- $(-3)^2 = (-3) \times (-3) = 9$

2

$$a^n \times a^m = a^{n+m}$$

ex :

- $4^3 \times 4^2 = 4^{3+2} = 4^5$
- $(-2)^5 \times (-2)^{-2} = (-2)^{5+(-2)} = (-2)^3$

3

$$\frac{a^n}{a^m} = a^{n-m}$$

ex :

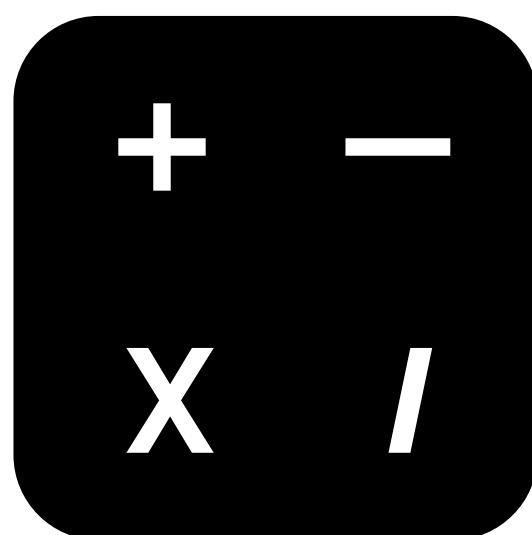
- $\frac{3^6}{3^4} = 3^{6-4} = 3^2$
- $\frac{5^{-3}}{5^{-6}} = 5^{-3-(-6)} = 5^3$

4

$$(a^n)^m = a^{n \times m}$$

ex :

- $(4^5)^4 = 4^{5 \times 4} = 4^{20}$
- $((-5)^2)^{-5} = (-5)^{2 \times (-5)} = (-5)^{-10}$



5

$$a^{-n} = \frac{1}{a^n}$$

ex :

- $8^{-5} = \frac{1}{8^5}$
- $3^{-7} = \frac{1}{3^7}$

6

$$a^n \times b^n = (ab)^n$$

ex :

- $5^3 \times 4^3 = (5 \times 4)^3 = (20)^3$
- $3^5 \times 6^5 = (3 \times 6)^5 = (18)^5$

7

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

ex :

- $\left(\frac{6}{9}\right)^4 = \frac{6^4}{9^4}$