

Review: Rules for Exponential Expressions

For any base a , and any formulas A and B :

$$(1) a^A \cdot a^B = a^{A+B}$$

$$(3) (a^A)^B = a^{A \cdot B}$$

~~$$a^A \cdot a^B = a^{A+B}$$~~

$$(4) a^{-A} = \frac{1}{a^A}$$

$$(2) \frac{a^A}{a^B} = a^{A-B}$$

Note:

• $a^A + a^B$ is already simplified; no formula

Example: Find $\left(\frac{2^5}{2^6}\right)^{-2}$.

Soln: $\left(\frac{2^5}{2^6}\right)^{-2} = (2^{5-6})^{-2}$ (Eqn 2)

$$= (2^{-1})^{-2}$$

$$= 2^{(-1) \cdot (-2)}$$

(Eqn 3)

$$= 2^2$$

$$= \boxed{4}$$