

Properties of Integer Exponents

Product of Powers
Power of Product
Quotient of Powers
Power of Quotient
Power of Power
Zero Power
Negative Power

$2^3 \times 2^4$ $= (2 \times 2 \times 2)(2 \times 2 \times 2 \times 2)$ $= 2^7$
$(2 \times 3)^3$ $= (2 \times 3)(2 \times 3)(2 \times 3)$ $= 2 \times 3 \times 2 \times 3 \times 2 \times 3$ $= 2^3 \times 3^3$
$\frac{2^5}{2^3} = \frac{2 \times \cancel{2} \times \cancel{2} \times \cancel{2} \times 2}{\cancel{2} \times \cancel{2} \times \cancel{2}}$ $= 2 \times 2 \times 1 \times 1 \times 1 = 2 \times 2$ $= 2^2$
$\left(\frac{2}{3}\right)^4 = \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3}$ $= \frac{2 \times 2 \times 2 \times 2}{3 \times 3 \times 3 \times 3} = \frac{2^4}{3^4}$
$(2^3)^4 = 2^3 \times 2^3 \times 2^3 \times 2^3$ $= (2 \times 2 \times 2)(2 \times 2 \times 2)(2 \times 2 \times 2)(2 \times 2 \times 2)$ $= 2^{12}$
$\frac{2^3}{2^3} = 2^{3-3} = 2^0 \rightarrow = 2^0 = 1$ $\frac{2^3}{2^3} = \frac{\cancel{2} \times \cancel{2} \times \cancel{2}}{\cancel{2} \times \cancel{2} \times \cancel{2}} = 1 \times 1 \times 1 = 1 \rightarrow = 2^0 = 1$
$\frac{2^3}{2^5} = 2^{3-5} = 2^{-2} \rightarrow = 2^{-2} = \frac{1}{2^2}$ $\frac{2^3}{2^5} = \frac{\cancel{2} \times \cancel{2} \times \cancel{2}}{2 \times \cancel{2} \times \cancel{2} \times \cancel{2} \times 2} = \frac{1 \times 1 \times 1}{2 \times 2} = \frac{1}{2^2}$

Property
$a^m \times a^n =$ _____
$(a \times b)^m =$ _____
$\frac{a^m}{a^n} =$ _____
$\left(\frac{a}{b}\right)^m =$ _____
$(a^m)^n =$ _____
$a^0 =$ _____
$a^{-m} =$ _____