

Rules for Exponents & Radicals

If n is a positive integer greater than 1 and both a and b are positive real numbers, then:

Rule	Example	Example
$a^m \cdot a^n =$	$x^2 \cdot x^3$	$3^{24} \cdot 3^5$
$(a^m)^n =$	$(x^2)^3$	$(4^3)^8$
$(ab)^n =$	$(xy)^3$	$(2b^3)^5$
$\left(\frac{a}{b}\right)^n =$	$\left(\frac{x}{y}\right)^4$	$\left(\frac{2t}{5}\right)^3$
$\frac{a^m}{a^n} =$	$\frac{x^5}{x^3}$	$\frac{2^{52}}{2^{21}}$
$a^{-n} =$	x^{-3}	$\left(\frac{5}{7}\right)^{-2}$
$\sqrt[n]{a^n} =$	$\sqrt[4]{x^4}$	$\sqrt[6]{64} =$
$\sqrt[n]{ab} =$	$\sqrt[3]{8x^3}$	$\sqrt[5]{243 \cdot 1024}$
$\sqrt[n]{\frac{a}{b}} =$	$\sqrt[4]{\frac{x^4}{16}}$	$\sqrt[3]{\frac{27}{125}}$
$a^{\frac{1}{n}} =$	$x^{\frac{1}{3}}$	$625^{\frac{1}{4}}$