Properties of Radicals

$$\sqrt[n]{a} = a^{\frac{1}{n}}$$

$a^{\frac{1}{n}} * a^{\frac{1}{n}} * a^{\frac{1}{n}} * a^{\frac{1}{n}} * a^{\frac{1}{n}} * \ldots a^{\frac{1}{n}}$ = a

n times

n is called the index

Without an index, one assumes the index is 2 $\sqrt{a} = \sqrt[2]{a}$

$\sqrt[n]{a} = a^{\frac{1}{n}}$	$\sqrt[n]{a} * \sqrt[n]{b} = \sqrt[n]{a * b}$
$\sqrt{a} = \sqrt[2]{a} = a^{\frac{1}{2}}$	$\sqrt[n]{a * b} = \sqrt[n]{a} * \sqrt[n]{b}$ and vice versa
$\sqrt[m]{\sqrt[n]{a}} = \sqrt[m*n]{a} = a^{\frac{1}{m*n}}$	$\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}$
$\sqrt[n]{a^n} = a \ if \ n \ is \ odd$	$\sqrt[n]{a^n}$ = |a| if n is even
$\sqrt[m]{a^n} = a^{\frac{n}{m}} = (\sqrt[m]{a})^n$	$\sqrt[index]{radicand}$ $\sqrt[4]{81} = 3$