TSC | WILLIAM D. LAW, JR. LEARNING COMMONS

POWER-ROOT TABLE

The square (2nd power) $(x)^2$	The square root (the root of 2) $(\sqrt{x})$
$0^2 = 0 \cdot 0 = \mathbf{0}$	$\sqrt{0} = \mathbf{0}$
$1^2 = 1 \cdot 1 = \mathbf{1}$	$\sqrt{1} = \mathbf{1}$
$2^2 = 2 \cdot 2 = \mathbf{4}$	$\sqrt{4} = \mathbf{2}$
$3^2 = 3 \cdot 3 = \mathbf{9}$	$\sqrt{9} = \mathbf{3}$
$4^2 = 4 \cdot 4 = \mathbf{16}$	$\sqrt{16} = \mathbf{4}$
$5^2 = 5 \cdot 5 = \mathbf{25}$	$\sqrt{25} = \mathbf{5}$
$6^2 = 6 \cdot 6 = \mathbf{36}$	$\sqrt{36} = \mathbf{6}$
$7^2 = 7 \cdot 7 = \mathbf{49}$	$\sqrt{49} = \mathbf{7}$
$8^2 = 8 \cdot 8 = \mathbf{64}$	$\sqrt{64} = \mathbf{8}$
$9^2 = 9 \cdot 9 = \mathbf{81}$	$\sqrt{81} = \mathbf{9}$
$10^2 = 10 \cdot 10 = \mathbf{100}$	$\sqrt{100} = \mathbf{10}$
$11^2 = 11 \cdot 11 = \mathbf{121}$	$\sqrt{121} = \mathbf{11}$
$12^2 = 12 \cdot 12 = \mathbf{144}$	$\sqrt{144} = \mathbf{12}$
$13^2 = 13 \cdot 13 = \mathbf{169}$	$\sqrt{169} = \mathbf{13}$
$14^2 = 14 \cdot 14 = \mathbf{196}$	$\sqrt{196} = \mathbf{14}$
$15^2 = 15 \cdot 15 = \mathbf{225}$	$\sqrt{225} = \mathbf{15}$
$16^2 = 16 \cdot 16 = \mathbf{256}$	$\sqrt{256} = \mathbf{16}$
$17^2 = 17 \cdot 17 = \mathbf{289}$	$\sqrt{289} = \mathbf{17}$
$18^2 = 18 \cdot 18 = \mathbf{324}$	$\sqrt{324} = \mathbf{18}$
$19^2 = 19 \cdot 19 = \mathbf{361}$	$\sqrt{361} = \mathbf{19}$
$20^2 = 20 \cdot 20 = \mathbf{400}$	$\sqrt{400} = \mathbf{20}$

NEGATIVE POWERS

Rule: $(-\boldsymbol{x})^2 \neq \boldsymbol{x}^2$

Example: $(-2)^2 \neq -2^2$

$(-2)^2 = -2 \cdot -2 = \mathbf{4}$ $\quad -2^2 = -2 \cdot 2 = \mathbf{-4}$

$\mathbf{4 \neq -4}$

$(-3)^2 = -3 \cdot -3 = \mathbf{9}$	$(-7)^2 = -7 \cdot -7 = \mathbf{49}$
$(-4)^2 = -4 \cdot -4 = \mathbf{16}$	$(-8)^2 = -8 \cdot -8 = \mathbf{64}$
$(-5)^2 = -5 \cdot -5 = \mathbf{25}$	$(-9)^2 = -9 \cdot -9 = \mathbf{81}$
$(-6)^2 = -6 \cdot -6 = \mathbf{36}$	$(-10)^2 = -10 \cdot -10 = \mathbf{1000}$

TSC | WILLIAM D. LAW, JR. LEARNING COMMONS

POWER-ROOT TABLE

The cube (3rd power) $(x)^3$	The cube root $(\sqrt[3]{x})$
$0^3 = 0 \cdot 0 \cdot 0 = \mathbf{0}$	$\sqrt[3]{0} = \mathbf{0}$
$1^3 = 1 \cdot 1 \cdot 1 = \mathbf{1}$	$\sqrt[3]{1} = \mathbf{1}$
$2^3 = 2 \cdot 2 \cdot 2 = \mathbf{8}$	$\sqrt[3]{8} = \mathbf{2}$
$3^3 = 3 \cdot 3 \cdot 3 = \mathbf{27}$	$\sqrt[3]{27} = 3$
$4^3 = 4 \cdot 4 \cdot 4 = \mathbf{64}$	$\sqrt[3]{64} = 4$
$5^3 = 5 \cdot 5 \cdot 5 = \mathbf{125}$	$\sqrt[3]{125} = 5$
$6^3 = 6 \cdot 6 \cdot 6 = \mathbf{216}$	$\sqrt[3]{216} = 6$
$7^3 = 7 \cdot 7 \cdot 7 = \mathbf{343}$	$\sqrt[3]{343} = 7$
$8^3 = 8 \cdot 8 \cdot 8 = 512$	$\sqrt[3]{512} = 8$
$9^3 = 9 \cdot 9 \cdot 9 = \mathbf{729}$	$\sqrt[3]{729} = 9$
$10^3 = 10 \cdot 10 \cdot 10 = \mathbf{1000}$	$\sqrt[3]{1000} = \mathbf{10}$

NEGATIVE ROOTS

Rule: $\sqrt[3]{-x}$ ***and*** $\sqrt[5]{-x}$ ***exist, but***

$\sqrt{-x}$ ***and*** $\sqrt[4]{-x}$ ***cannot be done with integers.***

Example: $\sqrt[3]{-8} = \mathbf{-2}$ *and* $\sqrt[5]{-32} = \mathbf{-2}$

$\sqrt{-4} \neq \pm 2$ $\quad \sqrt[4]{-32} \neq \pm 2$

This is true for all odd and even roots.

4th power $(x)^4$	5th power $(x)^5$	6th power $(x)^6$
$0^4 = \mathbf{0}$	$0^5 = \mathbf{0}$	$0^6 = \mathbf{0}$
$1^4 = \mathbf{1}$	$1^5 = \mathbf{1}$	$1^6 = \mathbf{1}$
$2^4 = \mathbf{16}$	$2^5 = \mathbf{32}$	$2^6 = \mathbf{64}$
$3^4 = \mathbf{81}$	$3^5 = \mathbf{243}$	$3^6 = \mathbf{729}$
$4^4 = \mathbf{256}$	$4^5 = \mathbf{1024}$	
$5^4 = \mathbf{625}$		