Formula

INDEX → $\sqrt[m]{p^n} = p^{\frac{n}{m}}$

NOTE: EVEN → $\sqrt{\text{NEG. \#}}$ = NOT A REAL NUMBER

(1) $\sqrt[3]{27} = \sqrt[3]{3\cdot3\cdot3} = 3$

(2) $\sqrt[3]{-8} = -\sqrt[3]{8} = -\sqrt[3]{2\cdot2\cdot2} = -2$

(3) $\sqrt[3]{\frac{27}{64}} = \sqrt[3]{\frac{3}{4}\cdot\frac{3}{4}\cdot\frac{3}{4}} = \frac{3}{4}$

(4) $\sqrt[3]{73} = 4.18$

(5) $\sqrt[4]{3} = 1.32$

(6) $\sqrt[4]{5^4} = \sqrt[4]{5\cdot5\cdot5\cdot5} = 5$

(7) $\sqrt[3]{n^3} = n$

(8) $\sqrt[4]{(5x-1)^4} = |5x-1|$

$\sqrt{16} = \sqrt{4\cdot4} = 4$

$\sqrt{16} = \sqrt{(-4)(-4)} = -4$ ~~−4~~

NOTE: RADICAL WITH AN EVEN INDEX CANNOT GIVE YOU A NEGATIVE NUMBER

(9) $-\sqrt[3]{(3x-5)^3} = -(3x-5) = -3x+5$

(10) $\sqrt[2]{9^2} = \sqrt{9} = \sqrt{3\cdot3} = 3$

(11) $-\sqrt[4]{256} = -\sqrt[4]{4\cdot4\cdot4\cdot4} = -4$

NOTE: YOUR EXPONENT ONLY AFFECTS WHAT IS TO ITS IMMEDIATE LEFT UNLESS THERE IS PARENS, THEN IT AFFECTS EVERYTHING INSIDE THE PARENS

(12) $(-16)^{\frac{1}{2}} = \sqrt{-16}$ NOT A REAL #

(13) $\sqrt[5]{3y} = \sqrt[5]{(3y)^1} = (3y)^{\frac{1}{5}}$

(14) $\sqrt{\frac{y}{5}} = \sqrt{\left(\frac{y}{5}\right)^1} = \left(\frac{y}{5}\right)^{\frac{1}{2}}$

(15) $16^{\frac{5}{2}} = \left(16^{\frac{1}{2}}\right)^5 = \left(\sqrt{16}\right)^5 = \left(\sqrt{4\cdot4}\right)^5 = 4^5 = 1024$

$2^5 6^4$

1024^4

PROP $p^{\frac{m}{n}} = \left(p^{\frac{1}{n}}\right)^m = \left(p^m\right)^{\frac{1}{n}}$

(16) $8^{\frac{2}{3}} = \left(8^{\frac{1}{3}}\right)^2 = \left(\sqrt[3]{8}\right)^2 = \left(\sqrt[3]{2\cdot2\cdot2}\right)^2 = 2^2 = 4$

(17) $64^{-\frac{1}{2}} = \frac{1}{64^{\frac{1}{2}}} = \frac{1}{\sqrt{64}} = \frac{1}{\sqrt{8\cdot8}} = \frac{1}{8}$