

MORE EXAMPLES ON POWERS

Thu 11 APR 2019

Write in the form of radical. Then evaluate w/o using calculator

$$a) \quad \underline{49^{\frac{1}{2}}} = \sqrt{49} = 7$$

power
exponent: $\frac{1}{2}$
base: 49

square root
This is in
Radical form

$$b) \underline{(-125)^{\frac{1}{3}}} = \underline{\underline{\sqrt[3]{(-125)}}} = -5$$

↳ This is in
power form

base? -125

exponent? $\frac{1}{3}$

This is in
Radical form

3rd-root
of (-125)

Also called
Cubic root

$$(-5) \cdot (-5) = +25$$

$$25 \cdot (-5) = \underline{-125}$$

$$\sqrt[3]{-8} = -2 \Leftrightarrow -8 = \boxed{-2} \cdot \boxed{-2} \cdot \boxed{-2}$$

$$c) \quad \underline{100^{\frac{1}{2}}} = \sqrt{100} = 10$$

Power
base = 100
exp = $\frac{1}{2}$

Square
root

$$d) \quad 81^{\frac{1}{4}} = \sqrt[4]{81} = 3$$

$$3^4 = 1 \cdot \underbrace{3 \cdot 3}_9 \cdot \underbrace{3 \cdot 3}_9 = 9 \cdot 9 = 81$$

$$e) 16^{0.25} = 16^{\frac{1}{4}} = \sqrt[4]{16} = 2$$

$$0.25 = 0.25 \cdot \frac{100}{100} = \frac{25}{100} = \frac{1}{4}$$

$$2^4 = 1 \cdot \underbrace{2 \cdot 2}_4 \cdot \underbrace{2 \cdot 2}_4 = 16$$

2) Write in power form. Then evaluate

$$a) \sqrt[10]{1024} = 1024^{\frac{1}{10}} = 2$$

$$b) \sqrt[3]{27^4} = (27^4)^{\frac{1}{3}} = 27^{\frac{4}{3}} = \left(27^{\frac{1}{3}}\right)^4 = 3^4$$

$$= 1 \cdot \underbrace{3 \cdot 3}_9 \cdot \underbrace{3 \cdot 3}_9 = 9 \cdot 9 = 81$$

$$c) \left(\sqrt[3]{-216} \right)^5 = \left((-216)^{\frac{1}{3}} \right)^5 = (-216)^{\frac{5}{3}} = \boxed{-7776}$$

$$= (-$$

$$216)^{\frac{1}{3}} = 6$$

$$(-6)^5 = -6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 = -7776$$