November 3, 2017

Exponents

Rules or Laws

① $a^n \cdot a^m = a^{n+m}$ (same base)

② $(a^n)^m = a^{n \cdot m}$

③ $\frac{a^n}{a^m} = a^{n-m}$

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④a $a^{-n} = \frac{1}{a^n}$

$2^{-3} = \frac{1}{2^3} = \frac{1}{8}$

④b $\frac{1}{a^{-n}} = a^n$

$\frac{1}{2^{-3}} = 2^3 = 8$

⑤ $a^0 = 1$

$\frac{x^2}{x^2} = 1$ but $\frac{x^2}{x^2} = x^{2-2=0} = x^0$

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⑥a $a^{\frac{m}{n}} = \sqrt[n]{a^m}$ (radicand)

$8^{1/3} = \sqrt[3]{8^1}$

$= 2$

⑥b $\frac{1}{a^{m/n}} = a^{-m/n} = \frac{1}{\sqrt[n]{a^m}}$

$\frac{1}{8^{2/3}} = \frac{1}{\sqrt[3]{8^2}} = \frac{1}{\sqrt[3]{64}} = \boxed{\frac{1}{4}}$

or

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

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