

## EXPONENTIAL & RADICAL RULES IN ALGEBRA

$$1. \sqrt[n]{ab} = \sqrt[n]{a} \cdot \sqrt[n]{b} \qquad 2. \sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}$$

$$3. \sqrt[n]{a+b} \neq \sqrt[n]{a} + \sqrt[n]{b} \qquad 4. \sqrt[n]{a-b} \neq \sqrt[n]{a} - \sqrt[n]{b}$$

(Rules 3 & 4 say that radicals are ***not additive*** in general. Many people assume that they are and make many ***mistakes*** with radicals.)

$$5. \frac{x^a}{x^b} = x^{a-b} \qquad 6. x^a \cdot x^b = x^{a+b} \qquad 7. \frac{1}{x^b} = x^{-b}$$

(In rules 5, 6, & 7; a & b can be any real number. In rules 5 & 7,  $x \neq 0$ )

$$8. x^0 = 1 \text{ (Assume } x \neq 0) \qquad 9. (x^a)^b = x^{a \cdot b}$$

$$10. \sqrt[n]{x^m} = x^{m/n} \qquad 11. (xy)^n = x^n y^n \qquad 12. \left(\frac{x}{y}\right)^n = \frac{x^n}{y^n}, y \neq 0.$$

If you need help in understanding these rules or any other rules in mathematics, call Michael Ragusa at **703-691-2730**.

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