WRONG formulas

Even though the formulas in the first column may seem "intuitive", all of them are in fact incorrect. You can see why they are incorrect and what are the correct analogs.

Incorrect "Formula"	Why it is incorrect	Correct Formula
$(a+b)^2 = a^2 + b^2$	$(1+1)^2 = 4$, but $1^2 + 1^2 = 2$	$(a+b)^2 = a^2 + 2ab + b^2$
$\frac{a}{b} + \frac{c}{d} = \frac{a+c}{b+d}$	$\frac{1}{2} + \frac{1}{2} = 1$, but $\frac{1+1}{2+2} = \frac{1}{2}$	$\frac{a}{b} + \frac{c}{d} = \frac{ad+bc}{bd}$
$\frac{1}{x+y} = \frac{1}{x} + \frac{1}{y}$	$\frac{1}{1+1} = \frac{1}{2}$, but $\frac{1}{1} + \frac{1}{1} = 2$	No analog
$(ax)^n = ax^n$	$(2 \cdot 1)^2 = 4$, but $2 \cdot 12 = 2$	$(ax)^n = a^n x^n$
$\sqrt{x^2} = x$	$\sqrt{(-1)^2} = \sqrt{1} = 1$, not -1	$\sqrt{x^2} = \lvert x \rvert$
$\sqrt{a+b} = \sqrt{a} + \sqrt{b}$	$\sqrt{9+16} = 5$, but $\sqrt{9} + \sqrt{16} = 7$	No analog
$\frac{ab+c}{bd} = \frac{a+c}{d}$	$\frac{2 \cdot 3 + 6}{3 \cdot 4} = 1$, but $\frac{2+6}{4} = 2$	$\frac{ab+cb}{bd} = \frac{a+c}{d}$
$\lvert a+b \rvert = \lvert a \rvert + \lvert b \rvert$	$\lvert 1 + (-1) \rvert = 0$, but $\lvert 1 \rvert + \lvert -1 \rvert = 2$	$\lvert a+b \rvert \leq \lvert a \rvert + \lvert b \rvert$

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