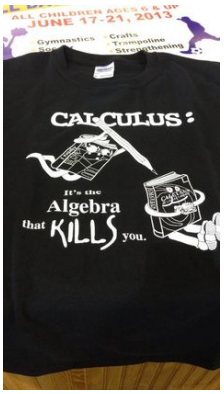
Algebra Missteps—Don't have an algebra casualty!

This is a work in progress. Want to add a misstep? Just let me (Dr. Sarah) know.



Improper Cancellation: The kitten picture on the right shows an improper cancellation. Polynomials can only be cancelled after first factoring to find multiplicative terms in common.

Many functions are not additive!

Ex 1: $\sqrt{x+y} \neq \sqrt{x} + \sqrt{y}$

$2 = \sqrt{4} \neq \sqrt{2} + \sqrt{2} \approx 1.41421356237 + 1.41421356237 \approx 2.82842712475$

Ex 2: $\dfrac{1}{x+y} \neq \dfrac{1}{x} + \dfrac{1}{y}$

$.2 = \dfrac{1}{2+3} \neq \dfrac{1}{2} + \dfrac{1}{3} = .5 + \overline{.33} = .8\overline{33}$

Ex 3: $\ln(x-y) \neq \ln x - \ln y$

$0 = \ln 1 = \ln(2-1) \neq \ln 2 - \ln 1 \approx 0.69314718056 - 0 = 0.69314718056$

Negative fractions are different than fractional exponents:

$x^{-2} = \frac{1}{x^2} \neq x^{\frac{1}{2}} = \sqrt{x}$

$..\overline{11} = \frac{1}{9} = \frac{1}{3^2} = 3^{-2} \neq 3^{\frac{1}{2}} = \sqrt{3} \approx 1.73205080757$