

Errors You Should No Longer Make

Algebra errors you should be making no longer.

| Error | Examples | |
|--|--|--------------------------------|
| $\frac{a}{b+c} \neq \frac{a}{b} + \frac{a}{c}$ | $\frac{2}{1+1} \neq \frac{2}{1} + \frac{2}{1}$ | $1 \neq 4$ |
| $\frac{a}{a+c} \neq \frac{1}{1+c}$ | $\frac{2}{4+3} \neq \frac{1}{2+3}$ | $\frac{2}{7} \neq \frac{1}{5}$ |
| $\sqrt{a+b} \neq \sqrt{a} + \sqrt{b}$ | $\sqrt{9+16} \neq \sqrt{9} + \sqrt{16}$ | $5 \neq 7$ |
| $e^{a \ln x} \neq ax$ | $e^{-2 \ln x} \neq -2x$ | $e^{-2 \ln x} = x^{-2}$ |
| $e^{a+b} \neq e^a + e^b$ | $e^{x+\ln y} \neq e^x + y$ | $e^{a+b} = e^a \cdot e^b$ |

Integration errors you should be making no longer.

| Error | Examples | |
|--|--|--|
| $\int f g dx \neq \int f dx \cdot \int g dx$ | $\int 2x dx \neq \int 2 dx \cdot \int x dx$ | $x^2 \neq 2x \cdot \frac{1}{2}x^2$ |
| $\int \frac{f}{g} dx \neq \frac{\int f dx}{\int g dx}$ | $\int \frac{x}{x} dx \neq \frac{\int x dx}{\int x dx}$ | $\int \frac{x}{e^{x^2}} dx \neq \frac{\int x dx}{\int e^{x^2} dx}$ |
| $\int \frac{1}{f} dx \neq \ln f$ | $\int \frac{1}{x^2+1} dx \neq \ln(x^2+1)$ | $\int \frac{1}{x^2+1} dx = \tan^{-1} x$ |
| $\int \frac{1}{e^x} dx \neq \ln e^x$ | $\int \frac{1}{e^x} dx = -e^{-x}$ | |