

**EVERYTHING YOU'VE EVER BEEN
TAUGHT ABOUT MATHEMATICS IS A LIE**

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Theorem. $0 = 1$.

Proof. We proceed by applying “integration by parts” to the integral $\int \frac{1}{x} dx$. Letting

$$u = \frac{1}{x} \qquad \text{and} \qquad dv = dx$$

we obtain

$$du = -\frac{1}{x^2} dx \qquad \text{and} \qquad v = x.$$

Thus we get

$$\int \frac{1}{x} dx = \int u dv = uv - \int v du = \frac{1}{x} x - \int x \left(-\frac{1}{x^2}\right) dx = 1 + \int \frac{1}{x} dx,$$

that is,

$$\int \frac{1}{x} dx = 1 + \int \frac{1}{x} dx.$$

Subtracting $\int \frac{1}{x} dx$ from both sides we obtain

$$0 = 1.$$