

A FIRST DOCUMENT

A. N. STUDENT

1. INTRODUCTION

Hello! This is my first document written in LaTeX. Documents are generally made up of words, sentences and paragraphs. This will be the first paragraph.

You tell LaTeX that you are starting a new paragraph by putting in one or more blank lines between the paragraphs. This will be the second paragraph.

2. ANOTHER SECTION

This is a very short section.

3. SOME MATHS

Let $f(x) = \frac{e^x}{1-x}$, then

$$f'(x) = \frac{e^x(1-x) - e^x(-1)}{(1-x)^2} = \frac{e^x(2-x)}{(1-x)^2}.$$

Because the derivative of $\sin(x)$ is $\cos(x)$, it follows that

$$\int_0^\pi \cos(x)dx = [\sin(x)]_0^\pi = 0 - 0 = 0.$$

4. FORMULAE

The three main differentiation formulae are the product rule,

$$\frac{d}{dx}(uv) = u \frac{dv}{dx} + v \frac{du}{dx},$$

the quotient rule,

$$\frac{d}{dx}(u/v) = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2},$$

and the chain rule,

$$\frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx},$$

where $y = y(u)$ is a function of u , and $u = u(x)$ is a function of x .

The rule for integration by parts is given by the formula

$$\int u \frac{dv}{dx} dx = uv - \int v \frac{du}{dx} dx,$$

where u and v are both functions of x .