

L^AT_EX Documents on the Web

In this document I have several math expressions and formulas of increasing complexity. You can see how several alternative methods work to turn the math into usable Web materials.

Case 1 In the simplest case, we may have some "in-line" math expressions. For example, a sentence may have a simple equation like $c^2 = a^2 + b^2$ or perhaps some Greek characters like $2\pi r^2$. L^AT_EX is able to handle inline equations like $\frac{\sin \theta}{\csc \theta} + \frac{\cos \theta}{\sec \theta} = 1$. This equation contained fractions, which forced L^AT_EX to increase the spacing between the lines.

Case 2 Almost as easy, we can set the math material into a separate "display".

$$\sigma^2 = \sum x^2 p(x) - \mu^2$$

Or maybe something that takes up a little more vertical space:

$$\frac{\frac{a}{x-y} + \frac{b}{x+y}}{1 + \frac{a-b}{a+b}}$$

Or that uses a special notation like root the operator:

$$\sqrt[n]{\frac{x^n - y^n}{1 + u^{2n}}}$$

Case 3 There are a lot more characters in the L^AT_EX language than you will find in the *symbol font* set. For example, there are the set operators:

$$P(A \cup B \cup C) = P(A) + P(B) + P(C) - P(A \cap B) - P(A \cap C) + P(B \cap C) - P(A \cap B \cap C)$$

and the vectors:

$$\vec{i} + \vec{j} = \vec{z}$$

Notice how the letters i and j are printed without their dots when used with a vector. Finally, here is a formula with an overbrace and underbrace:

$$\underbrace{a + \overbrace{b + \cdots + y}^{123} + z}_{\alpha\beta\gamma}$$

Case 4 Now lets get on to the really tough stuff ... expressions which require several lines of notation which lines up:

$$y = \begin{cases} -1 & : x < 0 \\ 0 & : x = 0 \\ +1 & : x > 0 \end{cases}$$

And:

$$\begin{aligned} (x + y)(x - y) &= x^2 - xy + xy - y^2 \\ &= x^2 - y^2 \\ (x + y)^2 &= x^2 + 2xy + y^2 \end{aligned}$$

Finally: B

$$\begin{aligned} &1 + \frac{1}{3} - \frac{1}{5} + \frac{1}{7} - \frac{1}{9} + \frac{1}{11} + \dots \\ &= \int_0^1 (1 + x^2 - x^4 - x^6 + x^8 - x^{10} + x^{12} - x^{14} + x^{16} + \dots) dx \\ &= \int_0^1 \frac{1 + x^2}{1 + x^4} dx \\ &= \frac{\pi}{4} \sqrt{2} \end{aligned}$$

Thats all I can stand to type!