

Sample Document in L^AT_EX

Your name
Roll no

1 Sample section

How much wood would wood chuck chuck if wood chuck would chuck wood ?

2 Writing Math

Here we will see how to write math. Normal math symbols : $\alpha\beta\gamma\epsilon\phi\Phi$.

1. Bad math : $B=A2+B*ci$, $B = A + B * ci$, $\phi:A -j N$
2. Good math : $B = A^2 + B \times c_{ij}$, $\phi : A \rightarrow N$.

2.1 Writing equations

- Normal equations : $\int_0^\infty e^{-x}x^{n-1}dx = \Gamma(n)$.
- Display math equation :

$$\int_0^\infty e^{-x}x^{n-1}dx = \Gamma(n) \tag{1}$$

- Display math equation with no numbering :

$$\int_0^\infty e^{-x}x^{n-1}dx = \Gamma(n)$$

- Writing sets

$$HP = \{ \langle M, x \rangle \mid M \text{ on inputs } x \text{ halts} \} \tag{2}$$

$$S = \left\{ i \mid \prod_{d|i} i \text{ is even}, i > 0 \right\} \tag{3}$$

2.2 Aligning equations, writing text in math mode

$$\begin{aligned} \sum_{i=1}^n i &= \sum_{i=1}^{n-1} i + n \\ &= \frac{(n-1) \cdot n}{2} + n && \text{[By induction hypothesis]} \\ &= \frac{n(n+1)}{2} \end{aligned}$$

3 Writing Algorithms

Algorithm 1: Algorithm detecting odd cycle of length k

Result: Checks if G has an odd cycle of length k

Set $t \leftarrow \sum_{r=0}^k \begin{bmatrix} k \\ r \end{bmatrix}_2$;

Do something **for** $u \in V$ **do**

if *Some condition* **then**

 Do this ;

 Do that ;

if $j > t$ **then**

 Reject

Accept iff all conditions ok

• Step 1 :

• Step 2 :

4 Drawing tables

Type	Language	Machine
Type 3	Regular	Finite Automata
Type 2	Context Free	Push Down Automata
Type 1	Context Sensitive	Linear Bounded Automata
Type 0	Recursively Enumerable	Turing Machine

5 Writing Theorems and Proofs

Claim 1. *If m is mass and c is speed of light then,*

$$E = mc^2 \quad (4)$$

Proof. Trivial. □

Claim 2. *There exists undecidable languages*

Proof. (Idea) Set of languages is $\mathcal{P}(\Sigma^*)$ is uncountably infinite, while set of all Turing machines which can be identified with Σ^* is only countably infinite. □

Theorem 3. *A language is decidable if and only if its complement is also decidable.*

Proof. (\implies) Forward direction

(\impliedby) Reverse direction □

6 Referring sections and theorems

Recalling equation 4 in claim 1 from section 5, it is possible to generate energy from nuclear reactions.

7 Including Images



Figure 1: CTAN lion (or lioness ?) drawing by Duane Bibby

8 Compilation