

We explore the possibility of formalizing classical notions in calculus without using the notion of variable. We provide a new mathematical ‘language’ capable of performing all classical computations (namely computing limits, finite differences, one-dimensional derivatives, and indefinite and definite integrals) without any need to introduce a variable. Equations written using our notation contain only function symbols (and as such are completely rigorous and don’t leave any room for vague interpretations). They also tend to be much shorter and more mathematically transparent than their traditional counterparts (for example, there is no need for introduction of new symbols in integration, and definite integration is formalized in such a way that all rules (including ‘substitution’ rules) for indefinite integration translate directly to definite integration). We also fully formalize the Landau little- o notation in a way that makes computation of limits using it fully rigorous.