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Super puper huge study of derivatives of functions

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Глава 1

Intro

One of the greatest problems of modern mathematics is derivation of complicated functions. Derivatives are used in many parts of science not only in maths. We do not put an aim to enumerate ways to use derivatives (and there are lots of processes which are being described and analysed by them, such as plotting, physics processes, chemical reactions, economics and etc.). The main topic of that report is finding derivative of one of the most complicated functions, which is located in the second part of current report.

Глава 2

Frightning function

Here's function we want to analyse. Don't close the article because of its frightening definition. We will beat it with software, powered by **recursive descent parser method** Here's function

$$\boxed{f(x) = 1\log_{1\cdot 5}(1(1\cdot 2\cdot 1x)^{1\cdot 3}) + 1e^{1(1x)^{1\cdot 2}+1\cdot 3\cdot 1\,\mathrm{tg}(\frac{1x}{1\cdot 2})}}$$

Using or innovative method of expressions optimizing, we turned that definition to that.

$$\boxed{f(x) = \log_5(2x)^3 + e^{x^2+3\,\mathrm{tg}(\frac{x}{2})}}$$

2.1 Derivative

Derivative of that function is

$$\boxed{f'(x) = \frac{\frac{\ln 5(2x)^{(3-1)}(3(0x+2\cdot 1)+0\ln(2x)2x)}{(2x)^3} - \frac{\ln(2x)^3\cdot 0}{5}}{\ln 5^2} + e^{x^2+3\,\mathrm{tg}(\frac{x}{2})}(x^{(2-1)}(2\cdot 1 + 0\ln xx) + 0\,\mathrm{tg}(\frac{x}{2}) + 3\frac{1\frac{1\cdot 2-}{2^2}}{\cos(\frac{3}{2}}$$

Again. Switching on our optimizing method.

$$\boxed{f'(x) = \frac{\frac{\ln 5(2x)^2\cdot 6}{(2x)^3}}{\ln 5^2} + e^{x^2+3\,\mathrm{tg}(\frac{x}{2})}(x\cdot 2 + 3\frac{\frac{2}{2^2}}{\cos(\frac{x}{2})^2})}$$

Here we go! Here's derivative expression. Hope it is right. Check it out on *wolframalpha.com* and send your feedback to *sergeyivanychev.com* email if something is wrong.

Глава 3

PS

Thanks for your attention.