MOSKOW INSTITUTE OF PHYSICS AND TECHNOLOGY

Differentiator

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1 Expression

In this simple example - function, that can solve my little brother I'll show you how works my Differentiator.

$$f(x) = (x-1) \cdot e^{\frac{1}{2 \cdot x}} + e^{(2 \cdot x - 1 - 6^x + \ln(\ln(\mathrm{ch}(153^x))))}$$

1.1 Cathedra of MATAN told

$$(x)' = 1$$

1.2 In Bashkiria kids know

$$(1)' = 0$$

1.3 This understand Australopithecus

$$(x-1)' = 1 - 0$$

1.4 Extremly obvious

$$(1)' = 0$$

1.5 When I am sleeping this dreaming to me

$$(2)' = 0$$

1.6 If you did not know that I am so sorry for you

$$(x)' = 1$$

1.7 It's like 2 + 2

$$(2 \cdot x)' = 0 \cdot x + 2 \cdot 1$$

1.8 Be smart and learn it finally

$$(\frac{1}{2 \cdot x})' = \frac{0 \cdot 2 \cdot x - 1 \cdot (0 \cdot x + 2 \cdot 1)}{2 \cdot x \cdot 2 \cdot x}$$

1.9 Ilsaf is FIVT, they know about that

$$(e^{\frac{1}{2 \cdot x}})' = e^{\frac{1}{2 \cdot x}} \cdot \frac{0 \cdot 2 \cdot x - 1 \cdot (0 \cdot x + 2 \cdot 1)}{2 \cdot x \cdot 2 \cdot x}$$

1.10 So that's easy I think, but not for you

$$((x-1)\cdot e^{\frac{1}{2\cdot x}})' = (1-0)\cdot e^{\frac{1}{2\cdot x}} + (x-1)\cdot e^{\frac{1}{2\cdot x}} \cdot \frac{0\cdot 2\cdot x - 1\cdot(0\cdot x + 2\cdot 1)}{2\cdot x\cdot 2\cdot x}$$

1.11 Bolzano-Weierstrass theorem makes you think

$$(2)' = 0$$

1.12 My dog can solve it, come on man

$$(x)' = 1$$

1.13 Note that

$$(2\cdot x)' = 0\cdot x + 2\cdot 1$$

1.14 In some intelectual grops of people it mean: Base

$$(1)' = 0$$

1.15 Shut the f*ck up and calculate it!

$$(2\cdot x - 1)' = 0\cdot x + 2\cdot 1 - 0$$

1.16 Not your level, I guess

$$(x)' = 1$$

1.17 I solve my lovely-lovely crocodile!)

$$(6^x)' = 6^x\cdot \ln(6)\cdot 1$$

1.18 Didn't even break a sweat

$$(2\cdot x - 1 - 6^x)' = 0\cdot x + 2\cdot 1 - 0 - 6^x\cdot \ln(6)\cdot 1$$

1.19 Who could I be if I hadn't do math?

$$(x)' = 1$$

1.20 What's the meaning of life?

$$(153^x)' = 153^x \cdot \ln(153) \cdot 1$$

1.21 Who am I?

$$(\mathrm{ch}(153^x))' = \mathrm{sh}(153^x) \cdot 153^x \cdot \ln(153) \cdot 1$$

1.22 Diffucult quastions, but easy derivative!)))

$$(\ln(\mathrm{ch}(153^x)))' = \frac{1}{\mathrm{ch}(153^x)} \cdot \mathrm{sh}(153^x) \cdot 153^x \cdot \ln(153) \cdot 1$$

1.23 Yeeeh get it!

$$(\ln(\ln(\mathrm{ch}(153^x))))' = \frac{1}{\ln(\mathrm{ch}(153^x))} \cdot \frac{1}{\mathrm{ch}(153^x)} \cdot \mathrm{sh}(153^x) \cdot 153^x \cdot \ln(153) \cdot 1$$

1.24 Cathedra of MATAN told

$$(2 \cdot x - 1 - 6^x + \ln(\ln(\mathrm{ch}(153^x))))' = 0 \cdot x + 2 \cdot 1 - 0 - 6^x \cdot \ln(6) \cdot 1 + \frac{1}{\ln(\mathrm{ch}(153^x))} \cdot \frac{1}{\mathrm{ch}(153^x)} \cdot \mathrm{sh}(153^x) \cdot 153^x \cdot \ln(153) \cdot 1$$

1.25 In Bashkiria kids know

$$(e^{(2 \cdot x - 1 - 6^x + \ln(\ln(\mathrm{ch}(153^x))))})' = e^{(2 \cdot x - 1 - 6^x + \ln(\ln(\mathrm{ch}(153^x))))} \cdot (0 \cdot x + 2 \cdot 1 - 0 - 6^x \cdot \ln(6) \cdot 1 + \frac{1}{\ln(\mathrm{ch}(153^x))} \cdot \frac{1}{\mathrm{ch}(153^x)} \cdot \mathrm{sh}(153^x) \cdot 153^x \cdot \ln(153) \cdot 1)$$

1.26 This understand Australopithecus

$$((x-1) \cdot e^{\frac{1}{2 \cdot x}} + e^{(2 \cdot x - 1 - 6^x + \ln(\ln(\mathrm{ch}(153^x))))})' = (1-0) \cdot e^{\frac{1}{2 \cdot x}} + (x-1) \cdot e^{\frac{1}{2 \cdot x}} \cdot \frac{0 \cdot 2 \cdot x - 1 \cdot (0 \cdot x + 2 \cdot 1)}{2 \cdot x \cdot 2 \cdot x} + e^{(2 \cdot x - 1 - 6^x + \ln(\ln(\mathrm{ch}(153^x))))} \cdot (0 \cdot x + 2 \cdot 1 - 0 - 6^x \cdot \ln(6) \cdot 1 + \frac{1}{\ln(\mathrm{ch}(153^x))} \cdot \frac{1}{\mathrm{ch}(153^x)} \cdot \mathrm{sh}(153^x) \cdot 153^x \cdot \ln(153) \cdot 1)$$

1.27 Extremly obvious

$$((x-1) \cdot e^{\frac{1}{2 \cdot x}} + e^{(2 \cdot x - 1 - 6^x + \ln(\ln(\mathrm{ch}(153^x))))})' = (1-0) \cdot e^{\frac{1}{2 \cdot x}} + (x-1) \cdot e^{\frac{1}{2 \cdot x}} \cdot \frac{0 \cdot 2 \cdot x - 1 \cdot (0 \cdot x + 2 \cdot 1)}{2 \cdot x \cdot 2 \cdot x} + e^{(2 \cdot x - 1 - 6^x + \ln(\ln(\mathrm{ch}(153^x))))} \cdot (0 \cdot x + 2 \cdot 1 - 0 - 6^x \cdot \ln(6) \cdot 1 + \frac{1}{\ln(\mathrm{ch}(153^x))} \cdot \frac{1}{\mathrm{ch}(153^x)} \cdot \mathrm{sh}(153^x) \cdot 153^x \cdot \ln(153) \cdot 1)$$

1.28 Final Derivative

$$((x-1) \cdot e^{\frac{1}{2 \cdot x}} + e^{(2 \cdot x - 1 - 6^x + \ln(\ln(\mathrm{ch}(153^x))))})' = e^{\frac{1}{2 \cdot x}} + (x-1) \cdot e^{\frac{1}{2 \cdot x}} \cdot \frac{-2}{2 \cdot x \cdot 2 \cdot x} + e^{(2 \cdot x - 1 - 6^x + \ln(\ln(\mathrm{ch}(153^x))))} \cdot (2 - 6^x \cdot \ln(6) + \frac{1}{\ln(\mathrm{ch}(153^x))} \cdot \frac{1}{\mathrm{ch}(153^x)} \cdot \mathrm{sh}(153^x) \cdot 153^x \cdot \ln(153))$$

2 Result

$$f(x) = (x-1) \cdot e^{\frac{1}{2 \cdot x}} + e^{(2 \cdot x - 1 - 6^x + \ln(\ln(\mathrm{ch}(153^x))))}$$

$$f'(x) = e^{\frac{1}{2 \cdot x}} + (x-1) \cdot e^{\frac{1}{2 \cdot x}} \cdot \frac{-2}{2 \cdot x \cdot 2 \cdot x} + e^{(2 \cdot x - 1 - 6^x + \ln(\ln(\mathrm{ch}(153^x))))} \cdot (2 - 6^x \cdot \ln(6) + \frac{1}{\ln(\mathrm{ch}(153^x))} \cdot \frac{1}{\mathrm{ch}(153^x)} \cdot \mathrm{sh}(153^x) \cdot 153^x \cdot \ln(153))$$

DERIVATIVE IS KILLED!!!

Thank you for your attention!

BOTAITE!