1 introductory work to the Minecraft clan "Matanists"

1.1 differentiate expression

Solution

$$sin(x)$$

Obviously

$$cos(x)$$

1.2 differentiate expression

$$\frac{sin(x) \cdot cos(x)}{5 + 4 \cdot 1 + ln(x) \cdot ln(x) \cdot 1 \cdot 1}$$

Obviously

$$\frac{A0 - A1}{A2}$$

A0 $= cos(x) \cdot cos(x) + (-1) \cdot sin(x) \cdot sin(x) \cdot 9 + ln(x) \cdot ln(x)$
A1 $= sin(x) \cdot cos(x) \cdot \frac{1}{x} \cdot ln(x) + \frac{1}{x} \cdot ln(x)$
A2 $= 9 + ln(x) \cdot ln(x) \cdot 9 + ln(x) \cdot ln(x)$

1.3 differentiate expression

$$\frac{\frac{sin(x) \cdot cos(x)}{5+4 \cdot 1+ln(x) \cdot ln(x) \cdot 1 \cdot 1}}{cos(x)} \cdot ln(\frac{\frac{\frac{cos(x)}{x}}{x}}{x})$$

Every Soviet schoolchild understands

$$A0 \cdot ln(\frac{\frac{\frac{cos(x)}{x}}{x}}{x}) + \frac{A1}{x \cdot x} \cdot \frac{1}{\frac{\frac{\frac{cos(x)}{x}}{x}}{x}} \cdot \frac{\frac{sin(x) \cdot cos(x)}{9+ln(x) \cdot ln(x)}}{cos(x)}$$

A0 $= \frac{A2 \cdot cos(x) - A3}{cos(x) \cdot cos(x)}$
A3 $= \frac{sin(x) \cdot cos(x)}{9+ln(x) \cdot ln(x)} \cdot (-1) \cdot sin(x)$

1.4 differentiate expression

$$\frac{\frac{\frac{\frac{\frac{\frac{\frac{\frac{x}{x}}{x}}{x}}{x}}{x}}{x}}{x}}{x} + \frac{\frac{\frac{cos(x)}{sin(x)}}{\frac{cos(x)}{ln(x)}}}{cos(x)}$$

Obviously

$$\frac{\frac{A0 - \frac{\frac{\frac{\frac{\frac{\frac{\frac{x}{x}}{x}}{x}}{x}}{x}}{x}}{x}}{x \cdot x} \cdot x - \frac{\frac{\frac{\frac{\frac{\frac{\frac{x}{x}}{x}}{x}}{x}}{x}}{x}}{x}}{x \cdot x} + A1$$

$$\mathrm{A0} = \frac{\frac{A2}{x \cdot x} \cdot x - \frac{\frac{\frac{\frac{x}{x}}{x}}{x}}{x}}{x \cdot x} \cdot x$$

$$\mathrm{A1} = \frac{\frac{A3}{cos(x) \cdot cos(x)} \cdot sin(x) - \frac{\frac{\frac{cos(x)}{sin(x)}}{cos(x)}}{cos(x)} \cdot cos(x)}{sin(x) \cdot sin(x)}$$

1.5 differentiate expression

$sin(x) \cdot ln(x) \cdot cos(x) + sin(x) \cdot ln(x) \cdot cos(x) + sin(x) \cdot ln(x) \cdot cos(x) + sin(x) \cdot ln(x) \cdot cos(x) + sin(x) \cdot ln(x) \cdot cos($

It's not hard to notice

$$A0 + A1 + A2 + A3$$

$\mathrm{A0} = A4 + A5 + A6$
$\mathrm{A5} = cos(x) \cdot ln(x) + \frac{1}{x} \cdot sin(x) \cdot cos(x) + (-1) \cdot sin(x) \cdot sin(x) \cdot ln(x)$
$\mathrm{A6} = cos(x) \cdot ln(x) + \frac{1}{x} \cdot sin(x) \cdot cos(x) + (-1) \cdot sin(x) \cdot sin(x) \cdot ln(x)$
$\mathrm{A3} = cos(x) \cdot ln(x) + \frac{1}{x} \cdot sin(x) \cdot cos(x) + (-1) \cdot sin(x) \cdot sin(x) \cdot ln(x)$

1.6 differentiate expression

$$x + x \cdot ln(x)$$

Obviously

$$1 + ln(x) + \frac{1}{x} \cdot x$$

1.7 differentiate expression

$$(x)^{(x)^{(x)^{(x)^x}}}$$

Obviously

$$(e)^{(x)^{(x)^{(x)^x} \cdot ln(x)} \cdot A0 \cdot ln(x) + \frac{(x)^{(x)^{(x)^x}}}{x}}$$

$\mathrm{A0} = (e)^{(x)^{(x)^x} \cdot ln(x)} \cdot A1 \cdot ln(x) + \frac{(x)^{(x)^x}}{x}$