CrInGeCrInGeProduction.Supercringeintroductionhere :

Let's calculate smth with a given function: f(x, y) = $\sin x \cdot y^{2.000}$
Firstly, let's insert all constants and simplify this expression: f(x, y) = $\sin x \cdot y^{2.000}$
BRITISH SCIENTISTS WERE SHOCKED, WHEN THEY COUNT IT!!!
In the point $M_0(x_0,\, y_0)$ = (3.000, 2.000) **it's value** = 0.564
Personally, I've always thought about first derivation of something like that function... Haven't you?
But now, by using informatics and math skills I feel that I'm prepared enough to calculate it!
1 step. finding a derivation of:
y
While preparing for exams, I learned a lot of new things, for example:
$(y)' = ... =$ [top secret] $= ... =$
$= 1.000$
2 step. finding a derivation of:
$y^{2.000}$
It's really easy to find:
$(y^{2.000})' = ... =$ [top secret] $= ... =$
$= 2.000 \cdot y$
3 step. finding a derivation of:
x
My roommate mumbled it in his sleep all night:
$(x)' = ... =$ [top secret] $= ... =$
$= 1.000$
4 step. finding a derivation of:
$\sin x$
Sounds logical that it is the same as:
$(\sin x)' = ... =$ [top secret] $= ... =$
$= \cos x$
5 step. finding a derivation of:
$\sin x \cdot y^{2.000}$
For centuries, people have hunted for the secret knowledge that:
$(\sin x \cdot y^{2.000})' = ... =$ [top secret] $= ... =$
$= \cos x \cdot y^{2.000} + 2.000 \cdot y \cdot \sin x$
Congratulations! **The first derivation of the expression** is:
$\cos x \cdot y^{2.000} + 2.000 \cdot y \cdot \sin x$In the point $M_0(x_0,\, y_0)$ = (3.000, 2.000) it's value = -3.395
Let's calculate the 0 derivation of the expression:
Finally... The 0 derivation of the expression:
$\sin x \cdot y^{2.000}$
BRITISH SCIENTISTS WERE SHOCKED AGAIN, WHEN THEY COUNT THE 0 DERIVATION OF THIS EXPRESSION!!!
In the point $M_0(x_0,\, y_0)$ = (3.000, 2.000) it's value = 0.564
Partial derivation of the expression on the variable x:
$\frac{\partial f}{\partial x} = 4.000 \cdot \cos x$
In the point $M_0(x_0,\, y_0)$ = (3.000, 2.000) it's value = -3.959970 !!!
Partial derivation of the expression on the variable y:
$\frac{\partial f}{\partial y} = 0.141 \cdot 2.000 \cdot y$
In the point $M_0(x_0,\, y_0)$ = (3.000, 2.000) it's value = 0.564480 !!!
Full derivation:
$\sqrt{(4.000 \cdot \cos x)^{2.000} + (0.141 \cdot 2.000 \cdot y)^{2.000}}$
In the point $M_0(x_0,\, y_0)$ = (3.000, 2.000) it's value = 4.000 !!!
Now let's consider the expression as a function of x variable: f(x) = $4.000 \cdot \sin x$
Maklorens formula for $x \to x_0 = 3.000$:
f(x) $= 0.564 + (-3.960) \cdot (x - 3.000) + (-0.282) \cdot (x - 3.000)^{2.000} + 0.660 \cdot (x - 3.000)^{3.000} + 0.024 \cdot (x - 3.000)^{4.000} + (-0.033) \cdot (x - 3.000)^{5.000}$+o((x
Graph f(x) = $4.000 \cdot \sin x$ on the diapasone $x \in [-10 : 10]$:

Tangent equation in the point $x_0 = 0.000$:
f(x) $= 4.000 \cdot x$
Normal equation in the point $x_0 = 0.000$:
f(x) $= (-0.250) \cdot x$