

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 ( $x = 3.000, y = 2.000$ ) 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:  $(y)' = 1.000$   
2 step. finding a derivation of:  
 $y^{2.000}$   
It's really easy to find:  $(y^{2.000})' = 2.000 \cdot y$   
3 step. finding a derivation of:  
 $x$   
My roommate mumbled it in his sleep all night:  $(x)' = 1.000$   
4 step. finding a derivation of:  
 $\sin x$   
Sounds logical that it is the same as:  $(\sin x)' = \cos x$   
5 step. finding a derivation of:  
 $\sin x \cdot y^{2.000}$   
For centuries, people have hunted for the secret knowledge that:  $(\sin x \cdot y^{2.000})' = \cos x \cdot y^{2.000} + 2.000 \cdot y \cdot \sin x$   
Congratulations! The first derivation of the expression is:

In the point ( $x = 3.000, y = 2.000$ ) it's value = -3.395  
Let's calculate the 4 derivation of the expression:  
Calculating the 1 derivation of the expression:  
1 step. finding a derivation of:  
 $y$   
Sounds logical that it is the same as:  $(y)' = 1.000$   
2 step. finding a derivation of:  
 $y^{2.000}$   
It's really easy to find:  $(y^{2.000})' = 2.000 \cdot y$   
3 step. finding a derivation of:  
 $x$   
My roommate mumbled it in his sleep all night:  $(x)' = 1.000$   
4 step. finding a derivation of:  
 $\sin x$   
What if it equals:  $(\sin x)' = \cos x$   
5 step. finding a derivation of:  
 $\sin x \cdot y^{2.000}$   
It's really easy to find:  $(\sin x \cdot y^{2.000})' = \cos x \cdot y^{2.000} + 2.000 \cdot y \cdot \sin x$   
Calculating the 2 derivation of the expression:  
1 step. finding a derivation of:  
 $x$   
Even my two-aged sister knows that it equals:  $(x)' = 1.000$   
2 step. finding a derivation of:  
 $\sin x$   
When I was child, my father always told me: "Remember, son:  $(\sin x)' = \cos x$   
3 step. finding a derivation of:  
 $y$   
I spend the hole of my life to find the answer and finally it's:  $(y)' = 1.000$   
4 step. finding a derivation of:  
2.000  
Man... Just look:  $(2.000)' = 0.000$   
5 step. finding a derivation of:  
 $2.000 \cdot y$   
For centuries, people have hunted for the secret knowledge that:  $(2.000 \cdot y)' = 2.000$   
6 step. finding a derivation of:  
 $2.000 \cdot y \cdot \sin x$   
It's really easy to find:  $(2.000 \cdot y \cdot \sin x)' = 2.000 \cdot \sin x + \cos x \cdot 2.000 \cdot y$   
7 step. finding a derivation of:  
 $y$   
It's simple as fuck:  $(y)' = 1.000$   
8 step. finding a derivation of:  
 $y^{2.000}$   
thanks to the results of my colleagues' scientific work, I know that it equals:  $(y^{2.000})' = 2.000 \cdot y$   
9 step. finding a derivation of:  
 $x$   
When I was child, my father always told me: "Remember, son:  $(x)' = 1.000$   
10 step. finding a derivation of:  
 $\cos x$   
It's really easy to find:  $(\cos x)' = (-1.000) \cdot \sin x$   
11 step. finding a derivation of:  
 $\cos x \cdot y^{2.000}$   
I was asked not to tell anyone that:  $(\cos x \cdot y^{2.000})' = (-1.000) \cdot \sin x \cdot y^{2.000} + 2.000 \cdot y \cdot \cos x$   
12 step. finding a derivation of:  
 $\cos x \cdot y^{2.000} + 2.000 \cdot y \cdot \sin x$   
For centuries, people have hunted for the secret knowledge that:  $(\cos x \cdot y^{2.000} + 2.000 \cdot y \cdot \sin x)' = (-1.000) \cdot \sin x \cdot y^{2.000} + 2.000 \cdot y \cdot \cos x + 2.000 \cdot \sin x + \cos x \cdot 2.000 \cdot y$   
Calculating the 3 derivation of the expression:  
1 step. finding a derivation of:  
 $y$   
My roommate mumbled it in his sleep all night:  $(y)' = 1.000$

$$\cos x \cdot y^{2.000} + 2.000 \cdot y \cdot \sin x$$

2 step. finding a derivation of:  
2.000  
What if it equals:  $(2.000)' = 0.000$   
3 step. finding a derivation of:  
 $2.000 \cdot y$   
Even my two-aged sister knows that it equals:  $(2.000 \cdot y)' = 2.000$   
4 step. finding a derivation of:  
 $x$   
I spend the hole of my life to find the answer and finally it's:  $(x)' = 1.000$   
5 step. finding a derivation of:  
 $\cos x$   
Even my two-aged sister knows that it equals:  $(\cos x)' = (-1.000) \cdot \sin x$   
6 step. finding a derivation of:  
 $\cos x \cdot 2.000 \cdot y$   
While preparing for exams, I learned a lot of new things, for example:  $(\cos x \cdot 2.000 \cdot y)' = (-1.000) \cdot \sin x \cdot 2.000 \cdot y + 2.000 \cdot \cos x$   
7 step. finding a derivation of:  
 $x$   
When I was child, my father always told me: "Remember, son:  $(x)' = 1.000$   
8 step. finding a derivation of:  
 $\sin x$   
Sounds logical that it is the same as:  $(\sin x)' = \cos x$   
9 step. finding a derivation of:  
2.000  
A true prince must know that it equals:  $(2.000)' = 0.000$   
10 step. finding a derivation of:  
 $2.000 \cdot \sin x$   
My roommate mumbled it in his sleep all night:  $(2.000 \cdot \sin x)' = 2.000 \cdot \cos x$   
11 step. finding a derivation of:  
 $2.000 \cdot \sin x + \cos x \cdot 2.000 \cdot y$   
My roommate mumbled it in his sleep all night:  $(2.000 \cdot \sin x + \cos x \cdot 2.000 \cdot y)' = 2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y + 2.000 \cdot \cos x$   
12 step. finding a derivation of:  
 $x$   
If someone asked me that in the middle of the night, I wouldn't hesitate to say:  $(x)' = 1.000$   
13 step. finding a derivation of:  
 $\cos x$   
A true prince must know that it equals:  $(\cos x)' = (-1.000) \cdot \sin x$   
14 step. finding a derivation of:  
 $y$   
My roommate mumbled it in his sleep all night:  $(y)' = 1.000$   
15 step. finding a derivation of:  
2.000  
While preparing for exams, I learned a lot of new things, for example:  $(2.000)' = 0.000$   
16 step. finding a derivation of:  
 $2.000 \cdot y$   
It's really easy to find:  $(2.000 \cdot y)' = 2.000$   
17 step. finding a derivation of:  
 $2.000 \cdot y \cdot \cos x$   
It's really easy to find:  $(2.000 \cdot y \cdot \cos x)' = 2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y$   
18 step. finding a derivation of:  
 $y$   
When I was child, my father always told me: "Remember, son:  $(y)' = 1.000$   
19 step. finding a derivation of:  
 $y^{2.000}$   
What if it equals:  $(y^{2.000})' = 2.000 \cdot y$   
20 step. finding a derivation of:  
 $x$   
If someone asked me that in the middle of the night, I wouldn't hesitate to say:  $(x)' = 1.000$   
21 step. finding a derivation of:  
 $\sin x$   
thanks to the results of my colleagues' scientific work, I know that it equals:  $(\sin x)' = \cos x$   
22 step. finding a derivation of:  
 $(-1.000)$   
A true prince must know that it equals:  $((-1.000))' = 0.000$   
23 step. finding a derivation of:  
 $(-1.000) \cdot \sin x$   
A true prince must know that it equals:  $((-1.000) \cdot \sin x)' = (-1.000) \cdot \cos x$   
24 step. finding a derivation of:  
 $(-1.000) \cdot \sin x \cdot y^{2.000}$   
When I was child, my father always told me: "Remember, son:  $((-1.000) \cdot \sin x \cdot y^{2.000})' = (-1.000) \cdot \cos x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \sin x$   
25 step. finding a derivation of:  
 $(-1.000) \cdot \sin x \cdot y^{2.000} + 2.000 \cdot y \cdot \cos x$   
For centuries, people have hunted for the secret knowledge that:  $((-1.000) \cdot \sin x \cdot y^{2.000} + 2.000 \cdot y \cdot \cos x)' = (-1.000) \cdot \cos x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \sin x + 2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y$   
26 step. finding a derivation of:  
 $(-1.000) \cdot \sin x \cdot y^{2.000} + 2.000 \cdot y \cdot \cos x + 2.000 \cdot \sin x + \cos x \cdot 2.000 \cdot y$   
A true prince must know that it equals:  $((-1.000) \cdot \sin x \cdot y^{2.000} + 2.000 \cdot y \cdot \cos x + 2.000 \cdot \sin x + \cos x \cdot 2.000 \cdot y)' = (-1.000) \cdot \cos x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \sin x + 2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y + 2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y + 2.000 \cdot \cos x$   
Calculating the 4 derivation of the expression:  
1 step. finding a derivation of:  
 $x$   
I spend the hole of my life to find the answer and finally it's:  $(x)' = 1.000$   
2 step. finding a derivation of:  
 $\cos x$   
It's simple as fuck:  $(\cos x)' = (-1.000) \cdot \sin x$   
3 step. finding a derivation of:  
2.000  
For centuries, people have hunted for the secret knowledge that:  $(2.000)' = 0.000$

4 step. finding a derivation of:  
 $2.000 \cdot \cos x$   
It's really easy to find:  $(2.000 \cdot \cos x)' = 2.000 \cdot (-1.000) \cdot \sin x$   
5 step. finding a derivation of:  
 $y$   
It's really easy to find:  $(y)' = 1.000$   
6 step. finding a derivation of:  
 $2.000$   
I spend the hole of my life to find the answer and finally it's:  $(2.000)' = 0.000$   
7 step. finding a derivation of:  
 $2.000 \cdot y$   
I was asked not to tell anyone that:  $(2.000 \cdot y)' = 2.000$   
8 step. finding a derivation of:  
 $x$   
If someone asked me that in the middle of the night, I wouldn't hesitate to say:  $(x)' = 1.000$   
9 step. finding a derivation of:  
 $\sin x$   
Even my two-aged sister knows that it equals:  $(\sin x)' = \cos x$   
10 step. finding a derivation of:  
 $(-1.000)$   
I spend the hole of my life to find the answer and finally it's:  $((-1.000))' = 0.000$   
11 step. finding a derivation of:  
 $(-1.000) \cdot \sin x$   
It's really easy to find:  $((-1.000) \cdot \sin x)' = (-1.000) \cdot \cos x$   
12 step. finding a derivation of:  
 $(-1.000) \cdot \sin x \cdot 2.000 \cdot y$   
It's really easy to find:  $((-1.000) \cdot \sin x \cdot 2.000 \cdot y)' = (-1.000) \cdot \cos x \cdot 2.000 \cdot y + 2.000 \cdot (-1.000) \cdot \sin x$   
13 step. finding a derivation of:  
 $(-1.000) \cdot \sin x \cdot 2.000 \cdot y + 2.000 \cdot \cos x$   
It's simple as fuck:  $((-1.000) \cdot \sin x \cdot 2.000 \cdot y + 2.000 \cdot \cos x)' = (-1.000) \cdot \cos x \cdot 2.000 \cdot y + 2.000 \cdot (-1.000) \cdot \sin x + 2.000 \cdot (-1.000) \cdot \sin x$   
14 step. finding a derivation of:  
 $x$   
It's simple as fuck:  $(x)' = 1.000$   
15 step. finding a derivation of:  
 $\cos x$   
A true prince must know that it equals:  $(\cos x)' = (-1.000) \cdot \sin x$   
16 step. finding a derivation of:  
 $2.000$   
My roommate mumbled it in his sleep all night:  $(2.000)' = 0.000$   
17 step. finding a derivation of:  
 $2.000 \cdot \cos x$   
I was asked not to tell anyone that:  $(2.000 \cdot \cos x)' = 2.000 \cdot (-1.000) \cdot \sin x$   
18 step. finding a derivation of:  
 $2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y + 2.000 \cdot \cos x$   
I spend the hole of my life to find the answer and finally it's:  $(2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y + 2.000 \cdot \cos x)' = 2.000 \cdot (-1.000) \cdot \sin x + (-1.000) \cdot \cos x \cdot 2.000 \cdot y + 2.000 \cdot (-1.000) \cdot \sin x + 2.000 \cdot (-1.000) \cdot \sin x$   
19 step. finding a derivation of:  
 $y$   
It's really easy to find:  $(y)' = 1.000$   
20 step. finding a derivation of:  
 $2.000$   
What if it equals:  $(2.000)' = 0.000$   
21 step. finding a derivation of:  
 $2.000 \cdot y$   
While preparing for exams, I learned a lot of new things, for example:  $(2.000 \cdot y)' = 2.000$   
22 step. finding a derivation of:  
 $x$   
Even my two-aged sister knows that it equals:  $(x)' = 1.000$   
23 step. finding a derivation of:  
 $\sin x$   
What if it equals:  $(\sin x)' = \cos x$   
24 step. finding a derivation of:  
 $(-1.000)$   
It's simple as fuck:  $((-1.000))' = 0.000$   
25 step. finding a derivation of:  
 $(-1.000) \cdot \sin x$   
My roommate mumbled it in his sleep all night:  $((-1.000) \cdot \sin x)' = (-1.000) \cdot \cos x$   
26 step. finding a derivation of:  
 $(-1.000) \cdot \sin x \cdot 2.000 \cdot y$   
It's simple as fuck:  $((-1.000) \cdot \sin x \cdot 2.000 \cdot y)' = (-1.000) \cdot \cos x \cdot 2.000 \cdot y + 2.000 \cdot (-1.000) \cdot \sin x$   
27 step. finding a derivation of:  
 $x$   
A true prince must know that it equals:  $(x)' = 1.000$   
28 step. finding a derivation of:  
 $\cos x$   
My roommate mumbled it in his sleep all night:  $(\cos x)' = (-1.000) \cdot \sin x$   
29 step. finding a derivation of:  
 $2.000$   
A true prince must know that it equals:  $(2.000)' = 0.000$   
30 step. finding a derivation of:  
 $2.000 \cdot \cos x$   
A true prince must know that it equals:  $(2.000 \cdot \cos x)' = 2.000 \cdot (-1.000) \cdot \sin x$   
31 step. finding a derivation of:  
 $2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y$   
If someone asked me that in the middle of the night, I wouldn't hesitate to say:  $(2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y)' = 2.000 \cdot (-1.000) \cdot \sin x + (-1.000) \cdot \cos x \cdot 2.000 \cdot y + 2.000 \cdot (-1.000) \cdot \sin x$   
32 step. finding a derivation of:

$x$   
I spend the hole of my life to find the answer and finally it's:  $(x)' = 1.000$   
33 step. finding a derivation of:  
 $\sin x$   
When I was child, my father always told me: "Remember, son:  $(\sin x)' = \cos x$   
34 step. finding a derivation of:  
 $(-1.000)$   
If someone asked me that in the middle of the night, I wouldn't hesitate to say:  $((-1.000))' = 0.000$   
35 step. finding a derivation of:  
 $(-1.000) \cdot \sin x$   
thanks to the results of my colleagues' scientific work, I know that it equals:  $((-1.000) \cdot \sin x)' = (-1.000) \cdot \cos x$   
36 step. finding a derivation of:  
 $y$   
For centuries, people have hunted for the secret knowledge that:  $(y)' = 1.000$   
37 step. finding a derivation of:  
 $2.000$   
For centuries, people have hunted for the secret knowledge that:  $(2.000)' = 0.000$   
38 step. finding a derivation of:  
 $2.000 \cdot y$   
What if it equals:  $(2.000 \cdot y)' = 2.000$   
39 step. finding a derivation of:  
 $2.000 \cdot y \cdot (-1.000) \cdot \sin x$   
If someone asked me that in the middle of the night, I wouldn't hesitate to say:  $(2.000 \cdot y \cdot (-1.000) \cdot \sin x)' = 2.000 \cdot (-1.000) \cdot \sin x + (-1.000) \cdot \cos x \cdot 2.000 \cdot y$   
40 step. finding a derivation of:  
 $y$   
I was asked not to tell anyone that:  $(y)' = 1.000$   
41 step. finding a derivation of:  
 $y^{2.000}$   
A true prince must know that it equals:  $(y^{2.000})' = 2.000 \cdot y$   
42 step. finding a derivation of:  
 $x$   
Man... Just look:  $(x)' = 1.000$   
43 step. finding a derivation of:  
 $\cos x$   
My roommate mumbled it in his sleep all night:  $(\cos x)' = (-1.000) \cdot \sin x$   
44 step. finding a derivation of:  
 $(-1.000)$   
It's simple as fuck:  $((-1.000))' = 0.000$   
45 step. finding a derivation of:  
 $(-1.000) \cdot \cos x$   
I was asked not to tell anyone that:  $((-1.000) \cdot \cos x)' = (-1.000) \cdot (-1.000) \cdot \sin x$   
46 step. finding a derivation of:  
 $(-1.000) \cdot \cos x \cdot y^{2.000}$   
If someone asked me that in the middle of the night, I wouldn't hesitate to say:  $((-1.000) \cdot \cos x \cdot y^{2.000})' = (-1.000) \cdot (-1.000) \cdot \sin x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \cos x$   
47 step. finding a derivation of:  
 $(-1.000) \cdot \cos x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \sin x$   
Man... Just look:  $(((-1.000) \cdot \cos x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \sin x)' = (-1.000) \cdot (-1.000) \cdot \sin x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \cos x + 2.000 \cdot (-1.000) \cdot \sin x + (-1.000) \cdot \cos x \cdot 2.000 \cdot y$   
48 step. finding a derivation of:  
 $(-1.000) \cdot \cos x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \sin x + 2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y$   
When I was child, my father always told me: "Remember, son:  $(((-1.000) \cdot \cos x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \sin x + 2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y)' = (-1.000) \cdot (-1.000) \cdot \sin x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \cos x + 2.000 \cdot (-1.000) \cdot \sin x + (-1.000) \cdot \cos x \cdot 2.000 \cdot y + 2.000 \cdot (-1.000) \cdot \sin x + (-1.000) \cdot \cos x \cdot 2.000 \cdot y + 2.000 \cdot (-1.000) \cdot \sin x$   
49 step. finding a derivation of:  
 $(-1.000) \cdot \cos x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \sin x + 2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y + 2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y + 2.000 \cdot \cos x$   
It's really easy to find:  $(((-1.000) \cdot \cos x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \sin x + 2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y + 2.000 \cdot \cos x + (-1.000) \cdot \sin x \cdot 2.000 \cdot y + 2.000 \cdot \cos x)' = (-1.000) \cdot (-1.000) \cdot \sin x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \cos x + 2.000 \cdot (-1.000) \cdot \sin x + (-1.000) \cdot \cos x \cdot 2.000 \cdot y + 2.000 \cdot (-1.000) \cdot \sin x + 2.000 \cdot (-1.000) \cdot \sin x + (-1.000) \cdot \cos x \cdot 2.000 \cdot y + 2.000 \cdot (-1.000) \cdot \sin x + 2.000 \cdot (-1.000) \cdot \sin x$   
Finally... The 4 derivation of the expression:

$$(-1.000) \cdot (-1.000) \cdot \sin x \cdot y^{2.000} + 2.000 \cdot y \cdot (-1.000) \cdot \cos x + 2.000 \cdot (-1.000) \cdot \sin x + (-1.000) \cdot \cos x \cdot 2.000 \cdot y + 2.000 \cdot (-1.000) \cdot \sin x + (-1.000) \cdot \cos x \cdot 2.000 \cdot y + 2.000 \cdot (-1.000) \cdot \sin x + 2.000 \cdot (-1.000) \cdot \sin x$$

BRITISH SCIENTISTS WERE SHOCKED AGAIN, WHEN THEY COUNT THE 4 DERIVATION OF THIS EXPRESSION!!!

In the point (x = 3.000, y = 2.000) it's value = 14.711  
Partial derivation of the expression on the variable x:  
 $\frac{\partial f}{\partial x} = 4.000 \cdot \cos x$   
In the point (x = 3.000, y = 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 (x = 3.000, y = 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 (x = 3.000, y = 2.000) it's value = 4.000 !!!  
Let's consider the expression as a function of x variable: f(x) =  $4.000 \cdot \sin x$   
Maklorens formula for  $x \rightarrow 3.000$ : f(x) =  $0.564 + (-3.960) \cdot (x - 3.000) + (-0.282) \cdot (x - 3.000)^{2.000} + 0.660 \cdot (x - 3.000)^{3.000} + 0.024 \cdot (x - 3.000)^{4.000} + (-0.033) \cdot (x - 3.000)^{5.000} + o((x - 3.000)^{5.000})$   
Graph f(x):



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