

1 Introduction

CrInGeCrInGeProduction.Supercringeintroductionhere :

2 Some basic knowledge about researching problem...

Parameters and constants we use in this work:

Constants (3):
e = 2.718282
pi = 3.141593
AbObA = 1337.228690
Variables (3):
a = 3.141500
kek = 13.000000
x = 1.000000
Parameters of exploration :
Number of differentiates : 2
Macloren's accuracy : 3
Tanget point : 0.200000
Delta coverage of tangent point: 2.500000
Graph diapasone : [-1 : 15]
So let's calculate smth with a given function: f(a, kek, x) = cos(a + kek) + ln(1.000 + x · kek)
Firstly, let's simplify this expression (if possible): f(a, kek, x) = cos(a + kek) + ln(1.000 + x · kek)

3 Exploration of the expression as a function of multiple variables

Calculation value of function in the point BRITISH SCIENTISTS WERE SHOCKED, WHEN THEY COUNT IT!!!

In the point M0(a0, kek0, x0) = (3.142, 13.000, 1.000) it's value = 1.73157

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 kek

When I was child, my father always told me: "Remember, son:

(kek)' =... = [top secret] = ... =

=1.000

2 step: Finding a derivation of x

thanks to the results of my colleagues' scientific work, I know that:

(x)' =... = [top secret] = ... =

=1.000

3 step: Finding a derivation of x · kek

What if:

(x · kek)' =... = [top secret] = ... =

=kek + x

4 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)' =... = [top secret] = ... =

=0.000

5 step: Finding a derivation of 1.000 + x · kek

It's really easy to find:

(1.000 + x · kek)' =... = [top secret] = ... =

=kek + x

6 step: Finding a derivation of ln(1.000 + x · kek)

My friends always beat me, because I didn't know that:

(ln(1.000 + x · kek))' =... = [top secret] = ... =

=1.000 / (1.000 + x · kek) · (kek + x)

7 step: Finding a derivation of kek

Sounds logical that it is the same as:

(kek)' =... = [top secret] = ... =

=1.000

8 step: Finding a derivation of a

My roommate mumbled it in his sleep all night:

(a)' =... = [top secret] = ... =

=1.000

9 step: Finding a derivation of a + kek

What if:

(a + kek)' =... = [top secret] = ... =

=2.000

10 step: Finding a derivation of cos(a + kek)

While preparing for exams, I learned a lot of new things, for example:

(cos(a + kek))' =... = [top secret] = ... =

=2.000 · (-1.000) · sin(a + kek)

11 step: Finding a derivation of cos(a + kek) + ln(1.000 + x · kek)

Sounds logical that it is the same as:

(cos(a + kek) + ln(1.000 + x · kek))' =... = [top secret] = ... =

=2.000 · (-1.000) · sin(a + kek) + 1.000 / (1.000 + x · kek) · (kek + x)

Congratulations! The first derivation of the expression is:

f'(a, kek, x) = 2.000 · (-1.000) · sin(a + kek) + 1.000 / (1.000 + x · kek) · (kek + x)

In the point M0(a0, kek0, x0) = (3.142, 13.000, 1.000) it's value = 1.84017

Finding the 2 derivation Let's find the 1 derivation of the expression:

1 step: Finding a derivation of kek

I was asked not to tell anyone that:

(kek)' =... = [top secret] = ... =

=1.000

2 step: Finding a derivation of x

Even my two-aged sister knows that:

(x)' =... = [top secret] = ... =

=1.000

3 step: Finding a derivation of x · kek

I was asked not to tell anyone that:

$(x \cdot kek)' = \dots = \text{[top secret]} = \dots =$
 $= kek + x$
4 step: Finding a derivation of 1.000
 If someone asked me that in the middle of the night, I wouldn't hesitate to say:
 $(1.000)' = \dots = \text{[top secret]} = \dots =$
 $= 0.000$
5 step: Finding a derivation of $1.000 + x \cdot kek$
 thanks to the results of my colleagues' scientific work, I know that:
 $(1.000 + x \cdot kek)' = \dots = \text{[top secret]} = \dots =$
 $= kek + x$
6 step: Finding a derivation of $\ln(1.000 + x \cdot kek)$
 My roommate mumbled it in his sleep all night:
 $(\ln(1.000 + x \cdot kek))' = \dots = \text{[top secret]} = \dots =$
 $= \frac{1.000}{1.000 + x \cdot kek} \cdot (kek + x)$
7 step: Finding a derivation of kek
 Even my two-aged sister knows that:
 $(kek)' = \dots = \text{[top secret]} = \dots =$
 $= 1.000$
8 step: Finding a derivation of a
 Man... Just look:
 $(a)' = \dots = \text{[top secret]} = \dots =$
 $= 1.000$
9 step: Finding a derivation of $a + kek$
 For centuries, people have hunted for the secret knowledge that:
 $(a + kek)' = \dots = \text{[top secret]} = \dots =$
 $= 2.000$
10 step: Finding a derivation of $\cos(a + kek)$
 I was asked not to tell anyone that:
 $(\cos(a + kek))' = \dots = \text{[top secret]} = \dots =$
 $= 2.000 \cdot (-1.000) \cdot \sin(a + kek)$
11 step: Finding a derivation of $\cos(a + kek) + \ln(1.000 + x \cdot kek)$
 For centuries, people have hunted for the secret knowledge that:
 $(\cos(a + kek) + \ln(1.000 + x \cdot kek))' = \dots = \text{[top secret]} = \dots =$
 $= 2.000 \cdot (-1.000) \cdot \sin(a + kek) + \frac{1.000}{1.000 + x \cdot kek} \cdot (kek + x)$
 Let's find **the 2 derivation** of the expression:
1 step: Finding a derivation of x
 When I was child, my father always told me: "Remember, son:
 $(x)' = \dots = \text{[top secret]} = \dots =$
 $= 1.000$
2 step: Finding a derivation of kek
 While preparing for exams, I learned a lot of new things, for example:
 $(kek)' = \dots = \text{[top secret]} = \dots =$
 $= 1.000$
3 step: Finding a derivation of $kek + x$
 thanks to the results of my colleagues' scientific work, I know that:
 $(kek + x)' = \dots = \text{[top secret]} = \dots =$
 $= 2.000$
4 step: Finding a derivation of kek
 Sounds logical that it is the same as:
 $(kek)' = \dots = \text{[top secret]} = \dots =$
 $= 1.000$
5 step: Finding a derivation of x
 A true prince must know that:
 $(x)' = \dots = \text{[top secret]} = \dots =$
 $= 1.000$
6 step: Finding a derivation of $x \cdot kek$
 If someone asked me that in the middle of the night, I wouldn't hesitate to say:
 $(x \cdot kek)' = \dots = \text{[top secret]} = \dots =$
 $= kek + x$
7 step: Finding a derivation of 1.000
 If someone asked me that in the middle of the night, I wouldn't hesitate to say:
 $(1.000)' = \dots = \text{[top secret]} = \dots =$
 $= 0.000$
8 step: Finding a derivation of $1.000 + x \cdot kek$
 My friends always beat me, because I didn't know that:
 $(1.000 + x \cdot kek)' = \dots = \text{[top secret]} = \dots =$
 $= kek + x$
9 step: Finding a derivation of 1.000
 What if:
 $(1.000)' = \dots = \text{[top secret]} = \dots =$
 $= 0.000$
10 step: Finding a derivation of $\frac{1.000}{1.000 + x \cdot kek}$
 Sounds logical that it is the same as:
 $(\frac{1.000}{1.000 + x \cdot kek})' = \dots = \text{[top secret]} = \dots =$
 $= \frac{(-1.000) \cdot (kek + x)}{(1.000 + x \cdot kek)^{2.000}}$
11 step: Finding a derivation of $\frac{1.000}{1.000 + x \cdot kek} \cdot (kek + x)$
 thanks to the results of my colleagues' scientific work, I know that:
 $(\frac{1.000}{1.000 + x \cdot kek} \cdot (kek + x))' = \dots = \text{[top secret]} = \dots =$
 $= \frac{(-1.000) \cdot (kek + x)}{(1.000 + x \cdot kek)^{2.000}} \cdot (kek + x) + 2.000 \cdot \frac{1.000}{1.000 + x \cdot kek}$
12 step: Finding a derivation of kek
 Even my two-aged sister knows that:
 $(kek)' = \dots = \text{[top secret]} = \dots =$
 $= 1.000$
13 step: Finding a derivation of a
 While preparing for exams, I learned a lot of new things, for example:
 $(a)' = \dots = \text{[top secret]} = \dots =$
 $= 1.000$
14 step: Finding a derivation of $a + kek$
 When I was child, my father always told me: "Remember, son:

$(a + kek)' = \dots = \text{[top secret]} = \dots =$
 $= 2.000$
15 step: Finding a derivation of $\sin(a + kek)$
 It's really easy to find:
 $(\sin(a + kek))' = \dots = \text{[top secret]} = \dots =$
 $= 2.000 \cdot \cos(a + kek)$
16 step: Finding a derivation of -1.000
 For centuries, people have hunted for the secret knowledge that:
 $(-1.000)' = \dots = \text{[top secret]} = \dots =$
 $= 0.000$
17 step: Finding a derivation of $(-1.000) \cdot \sin(a + kek)$
 If someone asked me that in the middle of the night, I wouldn't hesitate to say:
 $((-1.000) \cdot \sin(a + kek))' = \dots = \text{[top secret]} = \dots =$
 $= (-1.000) \cdot 2.000 \cdot \cos(a + kek)$
18 step: Finding a derivation of 2.000
 Sounds logical that it is the same as:
 $(2.000)' = \dots = \text{[top secret]} = \dots =$
 $= 0.000$
19 step: Finding a derivation of $2.000 \cdot (-1.000) \cdot \sin(a + kek)$
 I spend the hole of my life to find the answer and finally it's:
 $(2.000 \cdot (-1.000) \cdot \sin(a + kek))' = \dots = \text{[top secret]} = \dots =$
 $= 2.000 \cdot (-1.000) \cdot 2.000 \cdot \cos(a + kek)$
20 step: Finding a derivation of $2.000 \cdot (-1.000) \cdot \sin(a + kek) + \frac{1.000}{1.000+x \cdot kek} \cdot (kek + x)$
 While preparing for exams, I learned a lot of new things, for example:
 $(2.000 \cdot (-1.000) \cdot \sin(a + kek) + \frac{1.000}{1.000+x \cdot kek} \cdot (kek + x))' = \dots = \text{[top secret]} = \dots =$
 $= 2.000 \cdot (-1.000) \cdot 2.000 \cdot \cos(a + kek) + \frac{(-1.000) \cdot (kek+x)}{(1.000+x \cdot kek)^{2.000}} \cdot (kek + x) + 2.000 \cdot \frac{1.000}{1.000+x \cdot kek}$
Finally... The 2 derivation of the expression:
 $f^{(2)}(a, kek, x) = 2.000 \cdot (-1.000) \cdot 2.000 \cdot \cos(a + kek) + \frac{(-1.000) \cdot (kek+x)}{(1.000+x \cdot kek)^{2.000}} \cdot (kek + x) + 2.000 \cdot \frac{1.000}{1.000+x \cdot kek}$
 BRITISH SCIENTISTS WERE SHOCKED AGAIN, WHEN THEY COUNT THE 2 DERIVATION OF THIS EXPRESSION!!!
 In the point $M_0(a_0, kek_0, x_0) = (3.142, 13.000, 1.000)$ it's value = 2.77280

Finding partial derivations Partial derivation of the expression on the variable a:
 $\frac{\partial f}{\partial a} = (-1.000) \cdot \sin(a + 13.000)$
 In the point $M_0(a_0, kek_0, x_0) = (3.142, 13.000, 1.000)$ it's value = 0.42008 !!!
 Partial derivation of the expression on the variable kek:
 $\frac{\partial f}{\partial kek} = (-1.000) \cdot \sin(3.142 + kek) + \frac{1.000}{1.000+kek}$
 In the point $M_0(a_0, kek_0, x_0) = (3.142, 13.000, 1.000)$ it's value = 0.49151 !!!
 Partial derivation of the expression on the variable x:
 $\frac{\partial f}{\partial x} = 13.000 \cdot \frac{1.000}{1.000+13.000 \cdot x}$
 In the point $M_0(a_0, kek_0, x_0) = (3.142, 13.000, 1.000)$ it's value = 0.92857 !!!

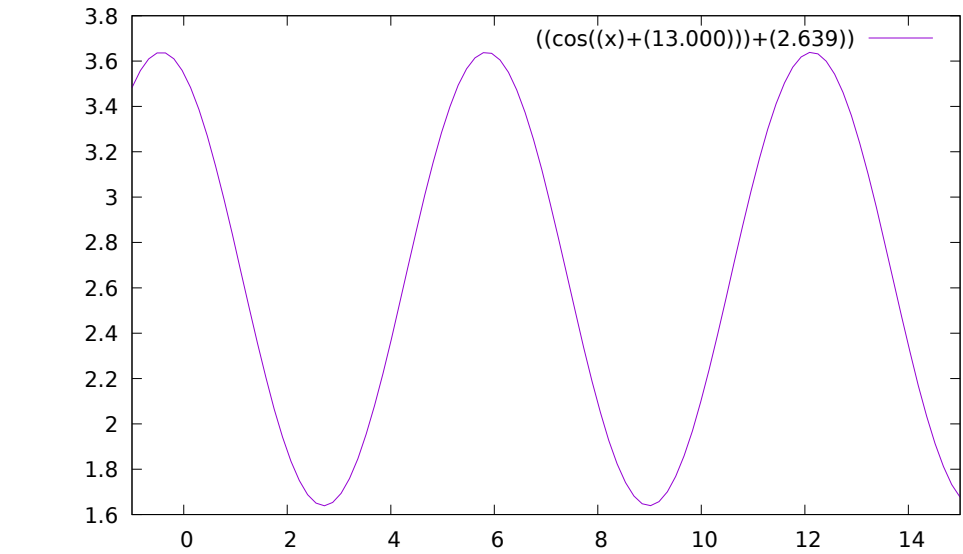
Finding full derivation Full derivation:
 $\sqrt{((-1.000) \cdot \sin(a + 13.000))^{2.000} + ((-1.000) \cdot \sin(3.142 + kek) + \frac{1.000}{1.000+kek})^{2.000} + (13.000 \cdot \frac{1.000}{1.000+13.000 \cdot x})^{2.000}}$
 In the point $M_0(a_0, kek_0, x_0) = (3.142, 13.000, 1.000)$ it's value = 1.13150 !!!

4 Exploration the expression as a function of the first variable

Now let's consider the expression as a function of a variable: $f(a) = \cos(a + 13.000) + 2.639$

Decomposing on Macloren's formula **Maklorems formula for $a \rightarrow a_0 = 3.142$:**
 $f(a) = 1.732 + 0.420 \cdot (a - 3.142) + 0.454 \cdot (a - 3.142)^{2.000} + (-0.070) \cdot (a - 3.142)^{3.000} + o((a - 3.142)^{3.000})$

Graphics **Graph** $f(a) = \cos(a + 13.000) + 2.639$ on the diapasone $a \in [-1 : 15]$:



Equations in the point **Tangent equation** in the point $a_0 = 0.200$:
 $f(a) = (-0.592) \cdot (a - 0.200) + 3.445$
Normal equation in the point $a_0 = 0.200$:
 $f(a) = 1.689 \cdot (a - 0.200) + 3.445$
 Their graphs in $\delta = 2.50000$ coverage of the point $a_0 = 0.200000$

