

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 / 1.000^AbObA) + ln(1.000 + x * kek * (1.000^(ln e) - 0.000))

Firstly, let's insert all constants:

f(a, kek, x) = cos(a + kek / 1.000^1337.229) + ln(1.000 + x * kek * (1.000^(ln 2.718) - 0.000))

And simplify this expression (if possible):

f(a, kek, x) = cos(a + kek) + ln(1.000 + x * kek)

3 Exploration the expression as a function of multiple variables

- Calculation a 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) expression's value = 1.73157

- Finding the first derivation of function

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

(kek)' =

= 1.000

2 step: Finding a derivation of x
Only after two cups of beer you might understand it:

(x)' =

= 1.000

3 step: Finding a derivation of x * kek
Never say it to girls:

(x * kek)' =

= kek + x

4 step: Finding a derivation of 1.000
Only by using special skills we might know::

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

= 0.000

5 step: Finding a derivation of 1.000 + x * kek
What if:

(1.000 + x * kek)' =

= kek + x

6 step: Finding a derivation of $\ln(1.000 + x \cdot kek)$
Even my two-aged sister knows that:

$$\begin{aligned} (\ln(1.000 + x \cdot kek))' &= \\ &= \frac{1.000}{1.000 + x \cdot kek} \cdot (kek + x) \end{aligned}$$

7 step: Finding a derivation of kek
The first task in MIPT was to calculate:

$$\begin{aligned} (kek)' &= \\ &= 1.000 \end{aligned}$$

8 step: Finding a derivation of a
Never say it to girls:

$$\begin{aligned} (a)' &= \\ &= 1.000 \end{aligned}$$

9 step: Finding a derivation of $a + kek$
It's simple as fuck:

$$\begin{aligned} (a + kek)' &= \dots = \text{[top secret]} = \dots = \\ &= 2.000 \end{aligned}$$

10 step: Finding a derivation of $\cos(a + kek)$
As we know:

$$\begin{aligned} (\cos(a + kek))' &= \\ &= 2.000 \cdot (-1.000) \cdot \sin(a + kek) \end{aligned}$$

11 step: Finding a derivation of $\cos(a + kek) + \ln(1.000 + x \cdot kek)$
I was asked not to tell anyone that:

$$\begin{aligned} (\cos(a + kek) + \ln(1.000 + x \cdot kek))' &= \\ &= 2.000 \cdot (-1.000) \cdot \sin(a + kek) + \frac{1.000}{1.000 + x \cdot kek} \cdot (kek + x) \end{aligned}$$

Congratulations! **The first derivation of the expression** is:

$$\begin{aligned} f'(a, kek, x) &= 2.000 \cdot (-1.000) \cdot \sin(a + kek) + \frac{1.000}{1.000 + x \cdot kek} \cdot (kek + x) \\ \text{In the point } M_0(a_0, kek_0, x_0) &= (3.142, 13.000, 1.000) \text{ it's value} = 1.84017 \end{aligned}$$

- Finding the 2 derivation

Let's find **the 1 derivation** of the expression:

1 step: Finding a derivation of kek
Only after two cups of beer you might understand it:

$$\begin{aligned} (kek)' &= \dots = \text{[top secret]} = \dots = \\ &= 1.000 \end{aligned}$$

2 step: Finding a derivation of x
Even my two-aged sister knows that:

$$\begin{aligned} (x)' &= \\ &= 1.000 \end{aligned}$$

3 step: Finding a derivation of $x \cdot kek$
Even my two-aged sister knows that:

$$\begin{aligned} (x \cdot kek)' &= \\ &= kek + x \end{aligned}$$

4 step: Finding a derivation of 1.000
When I was a child, my father always told me: "Remember, son:

$$\begin{aligned} (1.000)' &= \\ &= 0.000 \end{aligned}$$

5 step: Finding a derivation of $1.000 + x \cdot kek$
I have no words to describe this fact:

$$(1.000 + x \cdot kek)' = \dots = \text{[top secret]} = \dots = \\ = kek + x$$

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
I have no words to describe this fact:

$$(kek)' = \dots = \text{[top secret]} = \dots = \\ = 1.000$$

8 step: Finding a derivation of a
While preparing for exams, I learned a lot of new things, for example:

$$(a)' = \\ = 1.000$$

9 step: Finding a derivation of $a + kek$
It's really easy to find:

$$(a + kek)' = \\ = 2.000$$

10 step: Finding a derivation of $\cos(a + kek)$
What if:

$$(\cos(a + kek))' = \dots = \text{[top secret]} = \dots = \\ = 2.000 \cdot (-1.000) \cdot \sin(a + kek)$$

11 step: Finding a derivation of $\cos(a + kek) + \ln(1.000 + x \cdot kek)$
You should be aware of the fact that:

$$(\cos(a + kek) + \ln(1.000 + x \cdot kek))' = \\ = 2.000 \cdot (-1.000) \cdot \sin(a + kek) + \frac{1.000}{1.000 + x \cdot kek} \cdot (kek + x)$$

So **the 1 derivation** of the expression is:

$$2.000 \cdot (-1.000) \cdot \sin(a + kek) + \frac{1.000}{1.000 + x \cdot kek} \cdot (kek + x)$$

Let's find **the 2 derivation** of the expression:

1 step: Finding a derivation of x
A true prince must know that:

$$(x)' = \\ = 1.000$$

2 step: Finding a derivation of kek
For centuries, people have hunted for the secret knowledge that:

$$(kek)' = \\ = 1.000$$

3 step: Finding a derivation of $kek + x$
I spend the hole of my life to find the answer and finally it's:

$$(kek + x)' = \dots = \text{[top secret]} = \dots = \\ = 2.000$$

4 step: Finding a derivation of kek

Never say it to girls:

$$(kek)' =$$
$$= 1.000$$

5 step: Finding a derivation of x
It's really easy to find:

$$(x)' =$$
$$= 1.000$$

6 step: Finding a derivation of $x \cdot kek$
Sometimes I hear the same voice in my head, it always says:

$$(x \cdot kek)' = \dots = \text{[top secret]} = \dots =$$
$$= kek + x$$

7 step: Finding a derivation of 1.000
Even my two-aged sister knows that:

$$(1.000)' =$$
$$= 0.000$$

8 step: Finding a derivation of $1.000 + x \cdot kek$
Only by using special skills we might know::

$$(1.000 + x \cdot kek)' =$$
$$= kek + x$$

9 step: Finding a derivation of 1.000
My friends always beat me, because I didn't know that:

$$(1.000)' = \dots = \text{[top secret]} = \dots =$$
$$= 0.000$$

10 step: Finding a derivation of $\frac{1.000}{1.000+x \cdot kek}$
A true prince must know that:

$$(\frac{1.000}{1.000+x \cdot kek})' = \dots = \text{[top secret]} = \dots =$$
$$= \frac{(-1.000) \cdot (kek+x)}{(1.000+x \cdot kek)^{2.000}}$$

11 step: Finding a derivation of $\frac{1.000}{1.000+x \cdot kek} \cdot (kek + x)$
Sometimes I hear the same voice in my head, it always says:

$$(\frac{1.000}{1.000+x \cdot kek} \cdot (kek + x))' =$$
$$= \frac{(-1.000) \cdot (kek+x)}{(1.000+x \cdot kek)^{2.000}} \cdot (kek + x) + 2.000 \cdot \frac{1.000}{1.000+x \cdot kek}$$

12 step: Finding a derivation of kek
Only by using special skills we might know::

$$(kek)' = \dots = \text{[top secret]} = \dots =$$
$$= 1.000$$

13 step: Finding a derivation of a
While preparing for exams, I learned a lot of new things, for example:

$$(a)' =$$
$$= 1.000$$

14 step: Finding a derivation of $a + kek$
She: please, never speak with my dad about math... Me: ok) Also me after homework of matan:

$$(a + kek)' = \dots = \text{[top secret]} = \dots =$$
$$= 2.000$$

15 step: Finding a derivation of $\sin(a + kek)$
My roommate mumbled it in his sleep all night:

$$\begin{aligned}
 (\sin(a+kek))' &= \dots = \text{[top secret]} = \dots = \\
 &= 2.000 \cdot \cos(a+kek)
 \end{aligned}$$

16 **step**: Finding a derivation of -1.000
A true prince must know that:

$$\begin{aligned}
 (-1.000)' &= \dots = \text{[top secret]} = \dots = \\
 &= 0.000
 \end{aligned}$$

17 **step**: Finding a derivation of $(-1.000) \cdot \sin(a+kek)$
A true prince must know that:

$$\begin{aligned}
 ((-1.000) \cdot \sin(a+kek))' &= \\
 &= (-1.000) \cdot 2.000 \cdot \cos(a+kek)
 \end{aligned}$$

18 **step**: Finding a derivation of 2.000
If someone asked me that in the middle of the night, I wouldn’t hesitate to say:

$$\begin{aligned}
 (2.000)' &= \\
 &= 0.000
 \end{aligned}$$

19 **step**: Finding a derivation of $2.000 \cdot (-1.000) \cdot \sin(a+kek)$
When I was a child, my father always told me: ”Remember, son:

$$\begin{aligned}
 (2.000 \cdot (-1.000) \cdot \sin(a+kek))' &= \dots = \text{[top secret]} = \dots = \\
 &= 2.000 \cdot (-1.000) \cdot 2.000 \cdot \cos(a+kek)
 \end{aligned}$$

20 **step**: Finding a derivation of $2.000 \cdot (-1.000) \cdot \sin(a+kek) + \frac{1.000}{1.000+x \cdot kek} \cdot (kek+x)$
thanks to the results of my colleagues’ scientific work, I know that:

$$\begin{aligned}
 (2.000 \cdot (-1.000) \cdot \sin(a+kek) + \frac{1.000}{1.000+x \cdot kek} \cdot (kek+x))' &= \\
 &= 2.000 \cdot (-1.000) \cdot 2.000 \cdot \cos(a+kek) + \frac{(-1.000) \cdot (kek+x)}{(1.000+x \cdot kek)^{2.000}} \cdot (kek+x) + 2.000 \cdot \frac{1.000}{1.000+x \cdot kek}
 \end{aligned}$$

So **the 2 derivation** of the expression is:

$$2.000 \cdot (-1.000) \cdot 2.000 \cdot \cos(a+kek) + \frac{(-1.000) \cdot (kek+x)}{(1.000+x \cdot kek)^{2.000}} \cdot (kek+x) + 2.000 \cdot \frac{1.000}{1.000+x \cdot kek}$$

Finally... The 2 derivation of the expression:
 $f^{(2)}(\text{a, kek, x}) = 2.000 \cdot (-1.000) \cdot 2.000 \cdot \cos(a+kek) + \frac{(-1.000) \cdot (kek+x)}{(1.000+x \cdot kek)^{2.000}} \cdot (kek+x) + 2.000 \cdot \frac{1.000}{1.000+x \cdot kek}$
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 partical derivations Partial derivation of the expression on the variable a:

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

Finding full derivation Full derivation:

$$\begin{aligned}
 &\sqrt{((-1.000) \cdot \sin(a+13.000))^{2.000} + ((-1.000) \cdot \sin(3.142+kek) + \frac{1.000}{1.000+kek})^{2.000} + (13.000 \cdot \frac{1.000}{1.000+13.000 \cdot x})^{2.000}} \\
 \text{In the point } M_0(a_0, kek_0, x_0) &= (3.142, 13.000, 1.000) \text{ it’s value} = 1.13150 \text{ !!!}
 \end{aligned}$$

4 Exploration the expression as a function of the first variable

Now let’s consider the expression as a function of the first variable a: $f(\text{a}) = \cos(a+13.000) + 2.639$

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

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



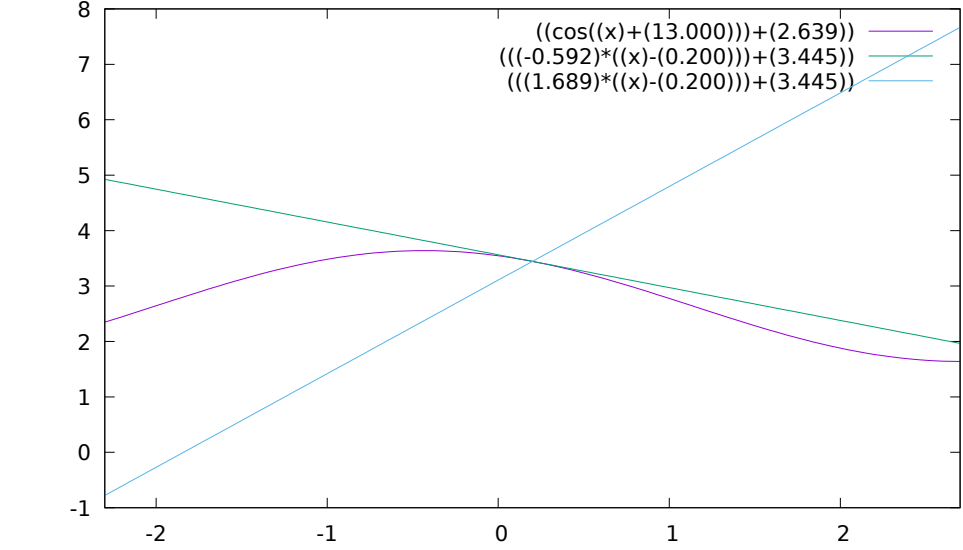
Equations in the point **Tangent equation** in the point $a_0 = 0.200$:

$$f(a) = (-0.592) \cdot (a - 0.200) + 3.445$$

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 $a_0 = 0.200000$



5 Conclusion

Ultrarcringeconclusionhere :