

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

Firstly, let's insert all constants:

f(a, kek, x) = cos(a + (kek / 1.0001337.229)) + 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 · kek)
Even my two-aged sister knows that:

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

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

$$(kek)' = 1.000$$

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

$$(a)' = 1.000$$

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

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

$$= 2.000$$

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

$$(\cos(a + kek))' = 2.000 \cdot (-1.000) \cdot \sin(a + kek)$$

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

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

Congratulations! **The first derivation of the expression** is:
 $f'(a, kek, x) = 2.000 \cdot (-1.000) \cdot \sin(a + kek) + \frac{1.000}{1.000 + x \cdot kek} \cdot (kek + x)$
In the point $M_0(a_0, kek_0, x_0) = (3.142, 13.000, 1.000)$ 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
Only after two cups of beer you might understand it:

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

$$= 1.000$$

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

$$(x)' = 1.000$$

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

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

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

$$(1.000)' = 0.000$$

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:

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

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

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

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

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

$$= 0.000$$

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

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

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

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:

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

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

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

$$= 1.000$$

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

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

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:

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

$$= 2.000$$

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

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

$$= 2.000 \cdot \cos(a + kek)$$

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

$$(-1.000)' = \textcolor{red}{\dots} = \textcolor{red}{[\text{top secret}]} = \textcolor{red}{\dots} =$$

$$= 0.000$$

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

$$((-1.000) \cdot \sin(a + kek))' = (-1.000) \cdot 2.000 \cdot \cos(a + kek)$$

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:

$$(2.000)' = 0.000$$

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:

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

$$= 2.000 \cdot (-1.000) \cdot 2.000 \cdot \cos(a + kek)$$

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

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

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:
 $f^{(2)}(a, kek, x) = 2.000 \cdot (-1.000) \cdot 2.000 \cdot \cos(a + kek) + \frac{(-1.000) \cdot (kek+x)}{(1.000+x \cdot kek)^{2.000}} \cdot (kek + x) + 2.000 \cdot \frac{1.000}{1.000+x \cdot kek}$
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:

$$\frac{\partial f}{\partial a} = (-1.000) \cdot \sin(a + 13.000)$$

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:

$$\sqrt{((-1.000) \cdot \sin(a + 13.000))^{2.000} + ((-1.000) \cdot \sin(3.142 + kek) + \frac{1.000}{1.000+kek})^{2.000} + (13.000 \cdot \frac{1.000}{1.000+13.000 \cdot x})^{2.000}}$$

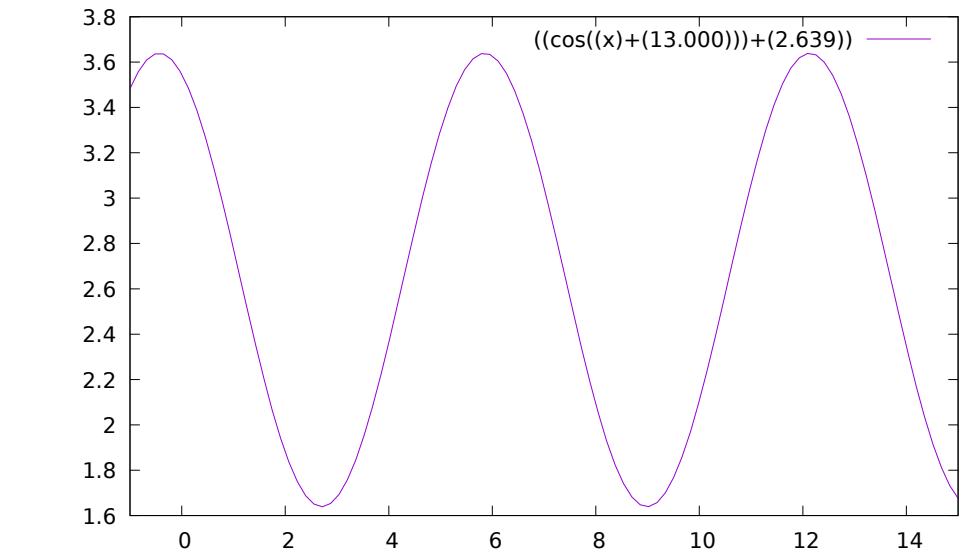
In the point $M_0(a_0, kek_0, x_0) = (3.142, 13.000, 1.000)$ it's value = 1.13150 !!!

4 Exploration the expression as a function of the first variable

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

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 $a \in [-1 : 15]$:



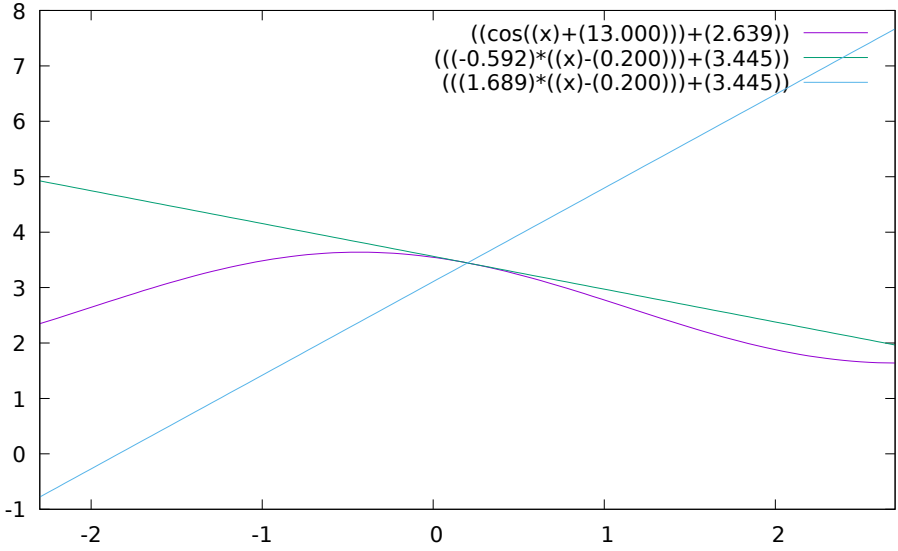
Equations in the point **Tangent equation** in the point $a_0 = 0.200$:

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

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 $a_0 = 0.200000$



5 Conclusion

Ultrarcringeconclusionhere :