

ACTIVATE THE PRACTICAL WORK OF THE STUDENT WITH THE HELP OF COMPUTER PROGRAMS

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Activity is a motive, a goal, a means of action, a social phenomenon that is constantly moving, and it has its beginning and end. The beginning of practical activities is characterized by the identification, understanding and achievement of learning objectives through the achievement of learning outcomes. Practical activity is modeled by project. Thus, the learning process at the beginning of the learning process of students is the result of learning.

The main task of the periodic management of practical actions is the selection of the most effective and supporting scientific validation of these options. This task requires the separation of general and specific features of reading and learning. The content of work done in mathematics, student learning tasks, teaching tools and teaching methods provides a common learning environment. Thus, each student can apply mathematics to his or her potential. The result of individuality is the characteristic of practical activity.

An activity is a system of actions that ends with a certain result based on socially significant motives, based on their own means. The system of action student practice. There are two interrelated aspects of student work. This is reading and learning.

As you know, the derivative of a function is widely used in solving examples and problems from the simplest examples and problems of mathematics and physics. In this case, arising from the derived meanings, namely, the problem of mapping a function, depending on the geometric content, the use of the derivative is presented using the MATLAB and Dev-C ++ software systems and the most common example is the algorithm of using the derivative.

Depending on the value of the function's pro-function, a linear equation, which is the slope $f'(x_0)$, can be written as follows:

$$y = f'(x_0)x + b \quad (1)$$

We use a single pass point $A(x_0, f(x_0))$ to calculate b:

$$f(x_0) = f'(x_0)x_0 + b \quad (2)$$

$$b = f(x_0) - f'(x_0)x_0 \quad (3)$$

By equation (3) of the (1):

$$y = f'(x_0)x + f(x_0) - f'(x_0)x_0$$

$$y = f'(x_0)(x - x_0) + f(x_0) \quad (4)$$

This equation (4) corresponds to the graph of the equation $f(x)$ and $A(x_0, f(x_0))$ called the inverse problem at the point.

Now, with equation (4), we have the following algorithm with the simplest example:

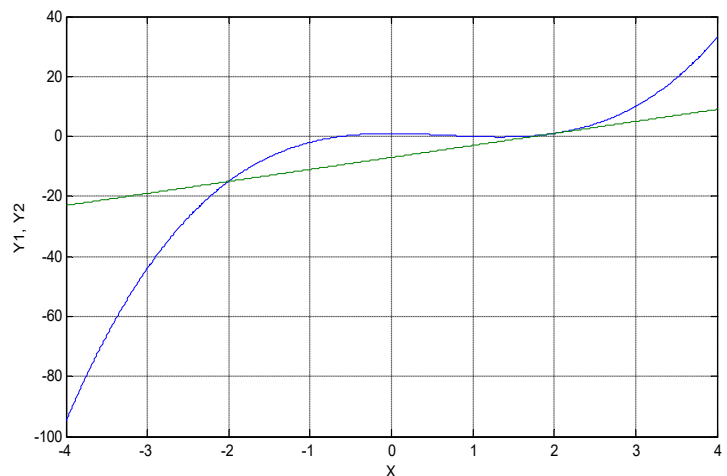
1-example. Write the equation at the point $x_0 = 2$ function graph $f(x) = x^3 - 2x^2 + 1$ and draw a graph. (Fig.1 a and b).

In this example $x_0 = 2$ and the solution algorithm is as follows:

Example solution sequence	Run sequence
you first need to find by the equation (4)	$f(x_0) = f(2) = 2^3 - 2 \cdot 2^2 + 1$
We define $f'(x)$	$f'(x) = \frac{df(x)}{dt} = (x^3 - 2x^2 + 1)' = 3x^2 - 4x$
will find $f'(x_0)$ via $f'(x)$	$f'(x_0) = 3 \cdot 2^2 - 4 \cdot 2 = 4$
Finally, using equation (4), we write the tangent equation	$y = 1 + 4(x - 2) = 4x - 7$ $y = 4x - 7$

In the MATLAB software system:

```
f=sym('x^3-2*(x^2)+1');
f1=diff(f,'x')
f1 =3*x^2 - 4*x
f1=subs(f1,'2')
f1 =4
f2=subs(f,'2')
f2 =1
%y=f(x0)+f'(x0)(x-2),x0=2;
y=sym('1+4*(x-2)')
y =4*x - 7
x=-4:0.01:4;
y1=x.^3-2*x.^2+1;
y2=4*x-7;
```



`plot(x,y1,x,y2)`

Fig.1 1-a

In the program Dev-C ++:

```
#include <conio.h>
#include <iostream>
#include <graphics.h>
#include <math.h>
using namespace std;
int main()
{
initwindow(800,400);
setbkcolor(WHITE);
clearviewport();
setcolor(BLACK);
line(0,200,getmaxx(),200);
line(400,0,400,getmaxy());
double x,y,t;
float k=0.02;
for(int t=-400;t<400;t=t+1)
{
x=400+t;
y=200-10*(k*t*k*t*k*t-2*k*t*k*t+1);
putpixel(x,y,BLACK);
y=200-10*(4*k*t-7);
putpixel(x,y,BLACK);
delay(10);
}
getch();
closegraph();
return 0;
}
```

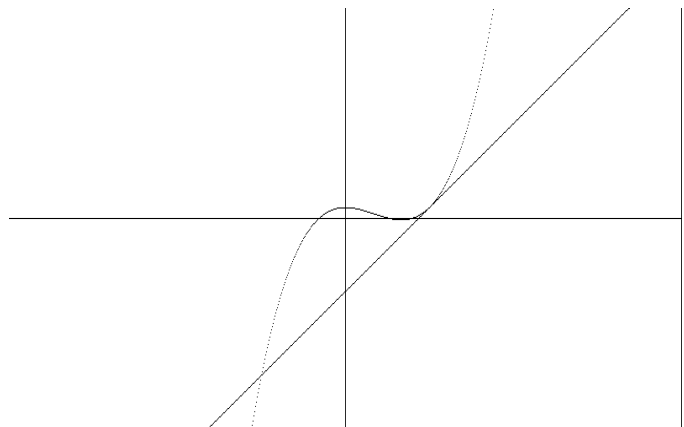


Fig. 1-b . Dev-C++, graphics in the console window

```
putpixel(x,y,BLACK);
y=200-10*(4*k*t-7);
putpixel(x,y,BLACK);
delay(10);
}
getch();
closegraph();
return 0;
}
```

When writing a program in Dev-C ++, it is necessary to choose the right coordinate head, scale and sequence factor.

2 example. Write a tangent equation for this function. $y = 2\sin(2x - \frac{\pi}{6})$ at the point $x_0 = \frac{\pi}{4}$ and draw a graph. (Fig. 2-a and b).

```

y=sym('2*sin(2*x*pi/180-pi/6)');
y1=diff(y,'x')
y1 =(pi*cos((pi*x)/90 - pi/6))/45
x0=45;
subs(y,'45')
ans =3^(1/2)
subs(y1,'45')
ans =pi/90
x=-90:90;
y1=2*sin(2*x*pi/180-pi/6);
y2=3.^(1/2)+pi/90*(x-45);
plot(x,y1,x,y2)

```

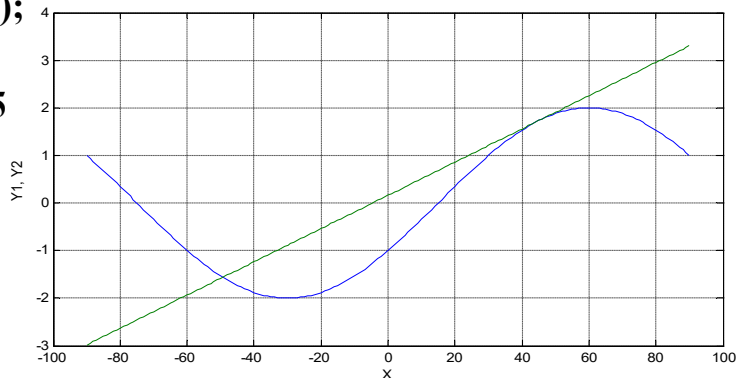
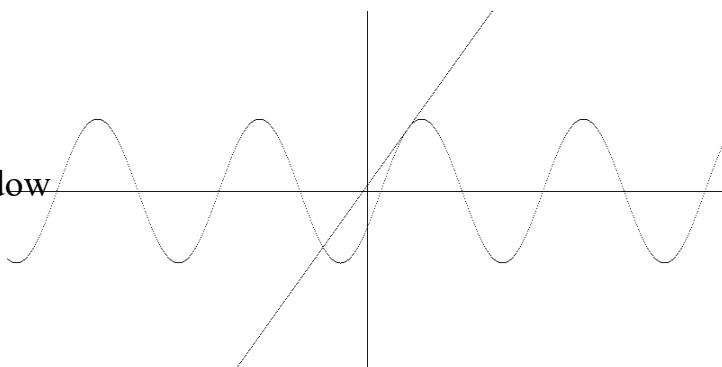


Fig. 2-a

Fig. 2-b . Dev-C ++,
graphics in the console window



Using the software MATLAB-R2010a, we can conclude that this program differs from other programs by high accuracy in mathematical operations, efficiency and ease of learning. The program Dev-C ++ expands creative thinking in mathematical operations and serves as the basis for creating interesting programs for young programmers. The use of modern information technologies in mathematics, including the use of computer graphics MATLAB, MAPLE, MathCAD and Dev-C ++, Java (SE-8) -clipse, provides interdisciplinary interpersonal communication.

References:

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