3

Octave.

-
-
-
-
-
-
- y = x^2*sinx
-

GNU Octave — ,
MATLAB .

,
. , Octave . Octave
, ,
, , ,

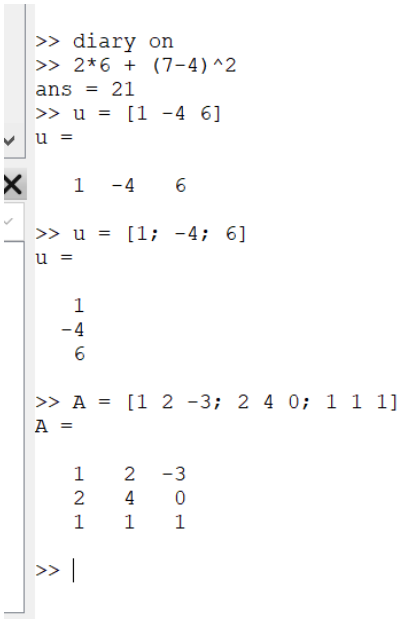
, - ,
. , Octave (
, , C++,).
C++ .
. gnuplot,
FLTK, Grace[en].

.

1. .
2. Octave .

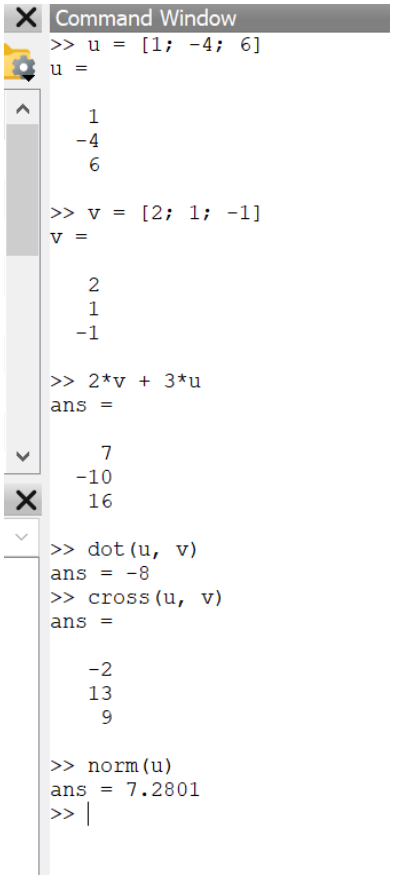
$$2 \times 6 + (7 - 4)2$$

3. - ( ).
4. - ( ).
5. .



. 1: .1

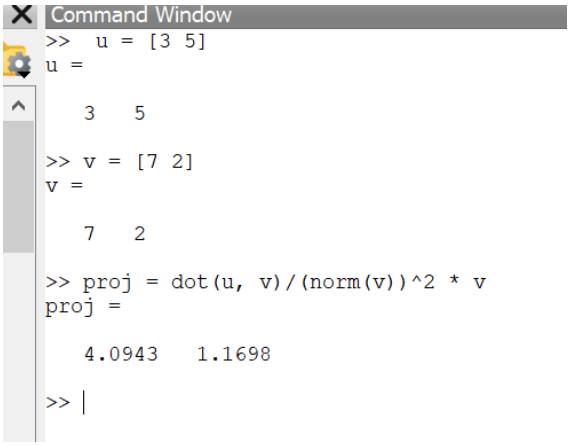
1. -
2.
3.
4.
5.


Command Window
>> u = [1; -4; 6]
u =
1
-4
6
>> v = [2; 1; -1]
v =
2
1
-1
>> 2*v + 3*u
ans =
7
-10
16
>> dot(u, v)
ans = -8
>> cross(u, v)
ans =
-2
13
9
>> norm(u)
ans = 7.2801
>>

. 2: .2

1. -
2.

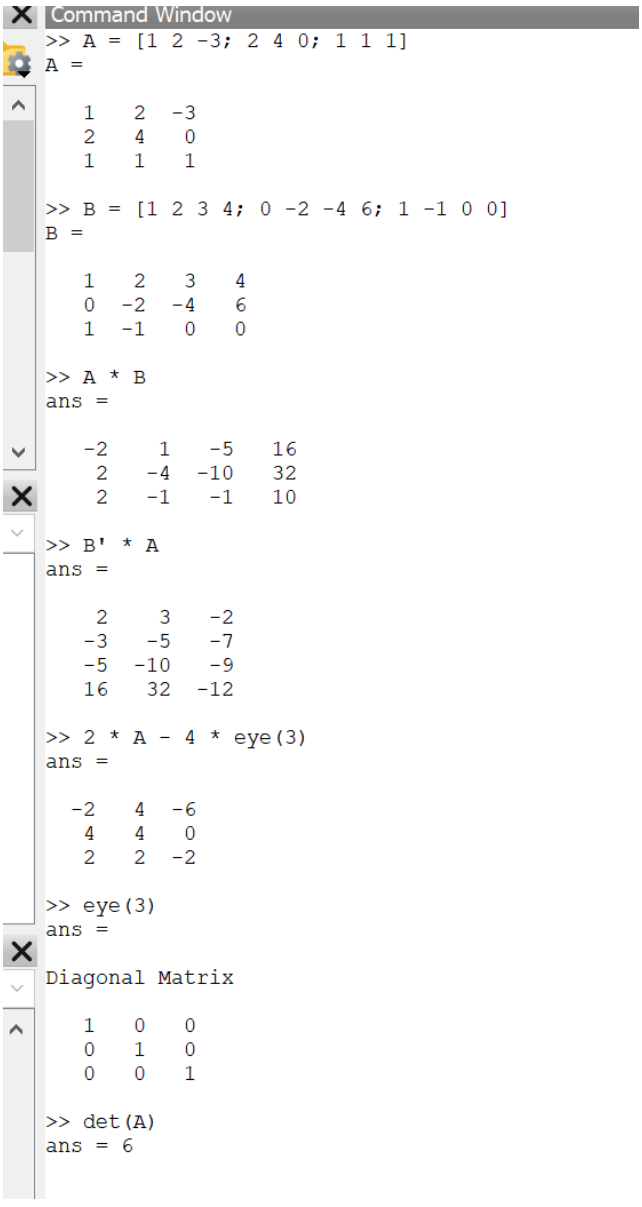
1.
2.



. 3: .3

3.
4. 2A − 4I
5.
6.
7. A
8. A

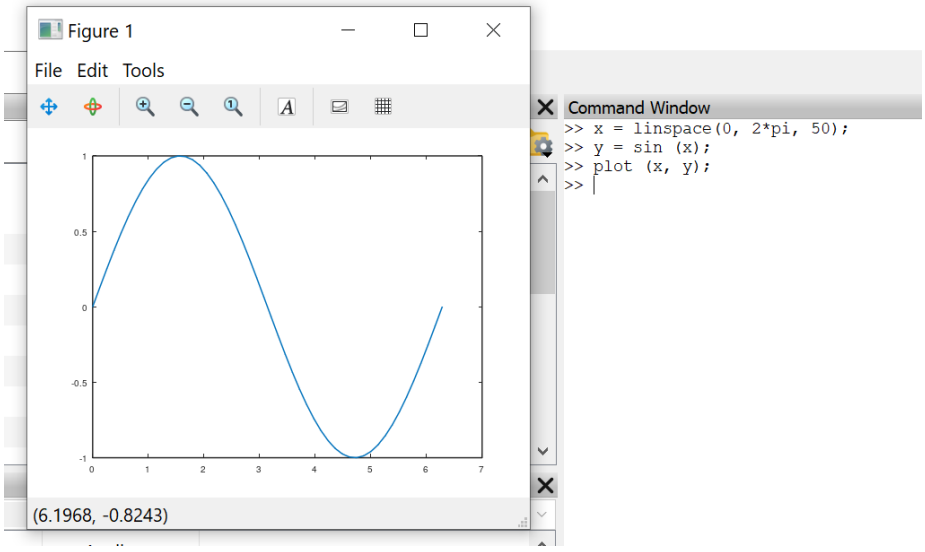
1. x
2. y = sin x
3.
4.
5.
6.
7.
8.
9.
10.


Command Window
>> A = [1 2 -3; 2 4 0; 1 1 1]
A =
1 2 -3
2 4 0
1 1 1
>> B = [1 2 3 4; 0 -2 -4 6; 1 -1 0 0]
B =
1 2 3 4
0 -2 -4 6
1 -1 0 0
>> A * B
ans =
-2 1 -5 16
2 -4 -10 32
2 -1 -1 10
>> B' * A
ans =
2 3 -2
-3 -5 -7
-5 -10 -9
16 32 -12
>> 2 * A - 4 * eye(3)
ans =
-2 4 -6
4 4 0
2 2 -2
>> eye(3)
ans =
Diagonal Matrix
1 0 0
0 1 0
0 0 1
>> det(A)
ans = 6

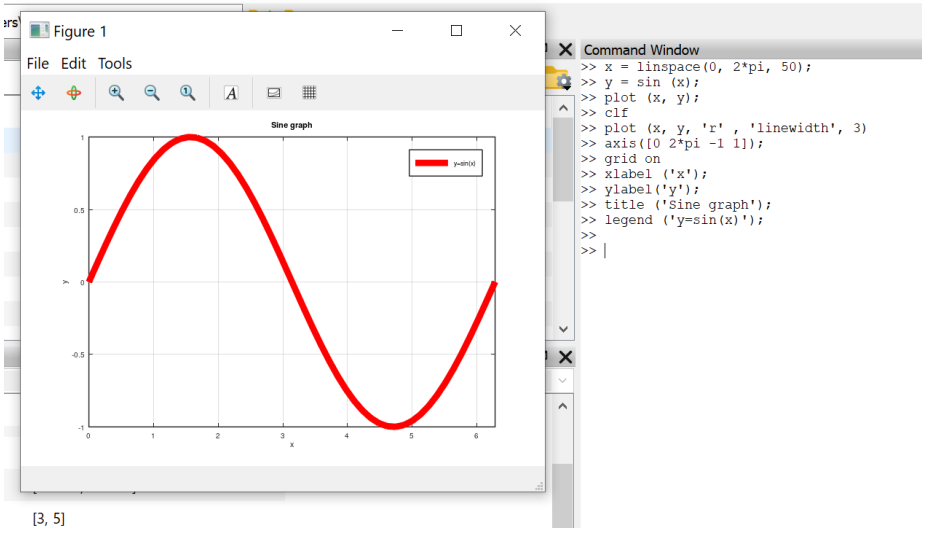
. 4: .4

```
>> inv (A)
ans =

   0.6667  -0.8333   2.0000
  -0.3333   0.6667  -1.0000
  -0.3333   0.1667        0

>> eig (A)
ans =

   4.5251 +      0i
   0.7374 + 0.8844i
   0.7374 - 0.8844i

>> rank (A)
ans = 3
>>
```

. 5: .5



. 6: .6



. 7: .7

1.
2.
3. ,
4. , hold on
5.
6. ,

1.
2.
3. y = x^2*sinx,
4.

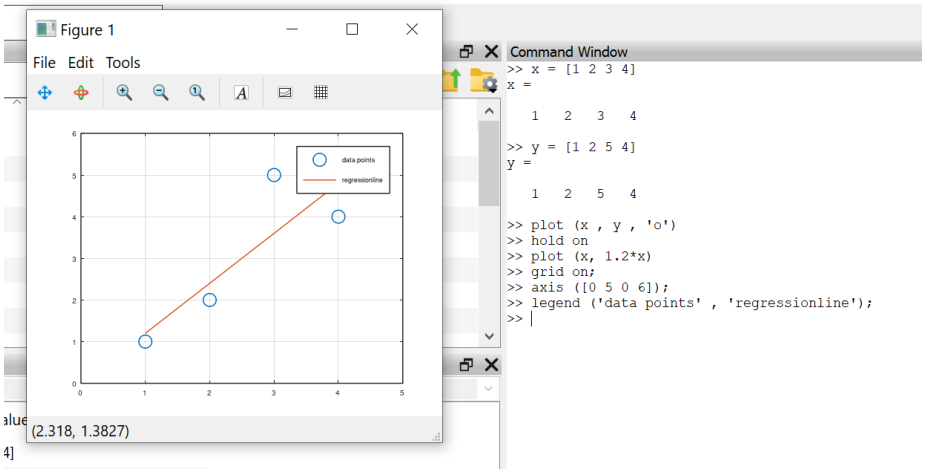


Figure 1
File Edit Tools
data points
regressionline
(2.318, 1.3827)
Command Window
>> x = [1 2 3 4]
x =
1 2 3 4
>> y = [1 2 5 4]
y =
1 2 5 4
>> plot (x , y , 'o')
>> hold on
>> plot (x, 1.2*x)
>> grid on;
>> axis ([0 5 0 6]);
>> legend ('data points' , 'regressionline');
>>

. 8: .8

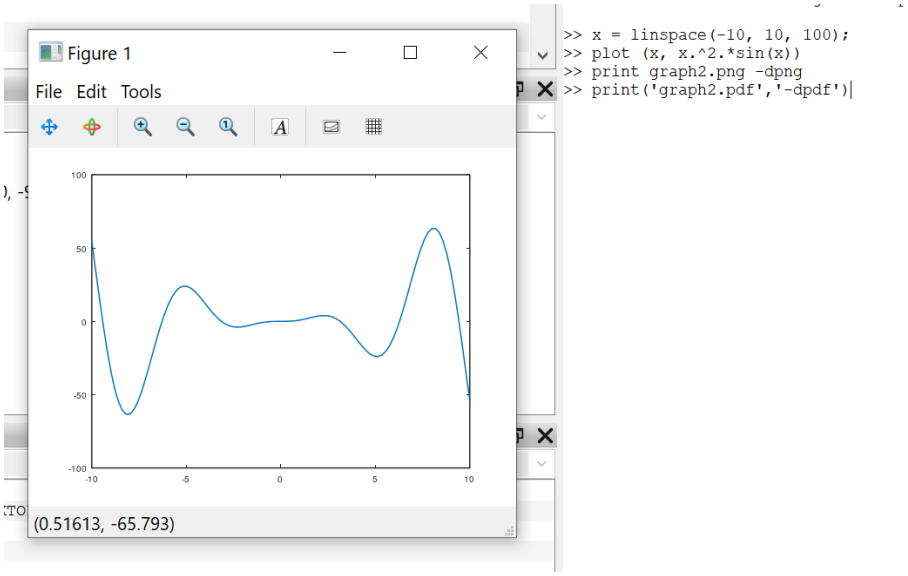
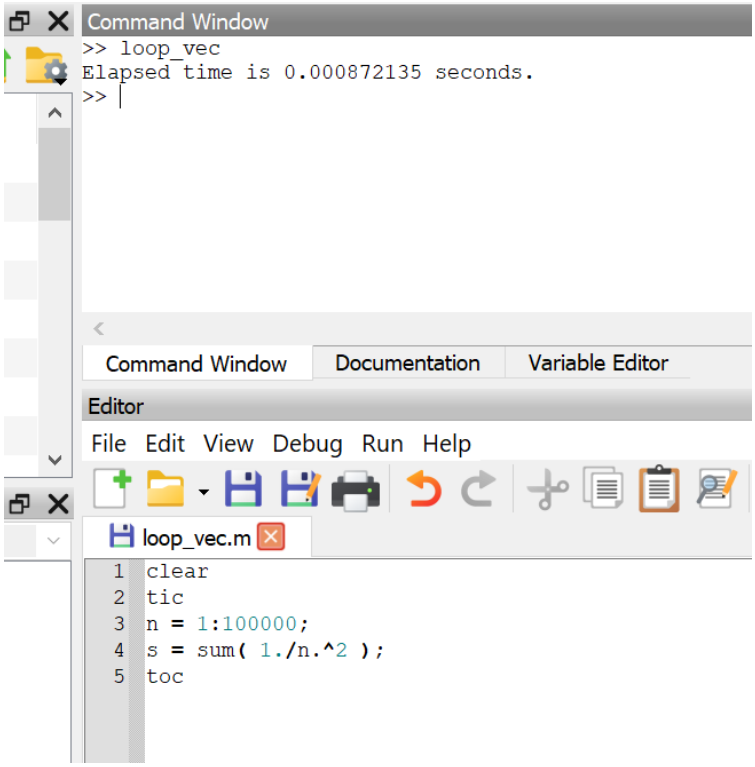


Figure 1
File Edit Tools
(0.51613, -65.793)
>> x = linspace(-10, 10, 100);
>> plot (x, x.^2.*sin(x))
>> print graph2.png -dpng
>> print('graph2.pdf','-dpdf')

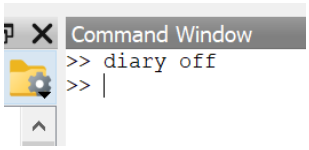
. 9: .9

1.
2. (3.1) . loop_for.m
3. loop_for.m.
4. (3.1) . loop_vec.m
5. loop_vec.m. Elapsed time is 0.040108 seconds.



. 10: .10

6.



. 11: .11

Octave.