# Octave

GNU Octave, version 3.0.1


Octave was configured for "i486-pc-linux-gnu".

Additional information about Octave is available at http://www.octave.org.

Please contribute if you find this software useful.
For more information, visit http://www.octave.org/help-wanted.html

Report bugs to <bug@octave.org> (but first, please read
http://www.octave.org/bugs.html to learn how to write a helpful report).

For information about changes from previous versions, type `news'.

c5 =

```
   0.0321031  -0.1975300  -0.0292464   1.0457547   0.0027743  -0.0070102
```

a =

```
   0   0   0   0   0   0
   5   0   0   0   0   0
   0   4   0   0   0   0
   0   0   3   0   0   0
   0   0   0   2   0   0
   0   0   0   0   1   0
```

c5T =

```
   0.0321031
  -0.1975300
  -0.0292464
   1.0457547
   0.0027743
  -0.0070102
```

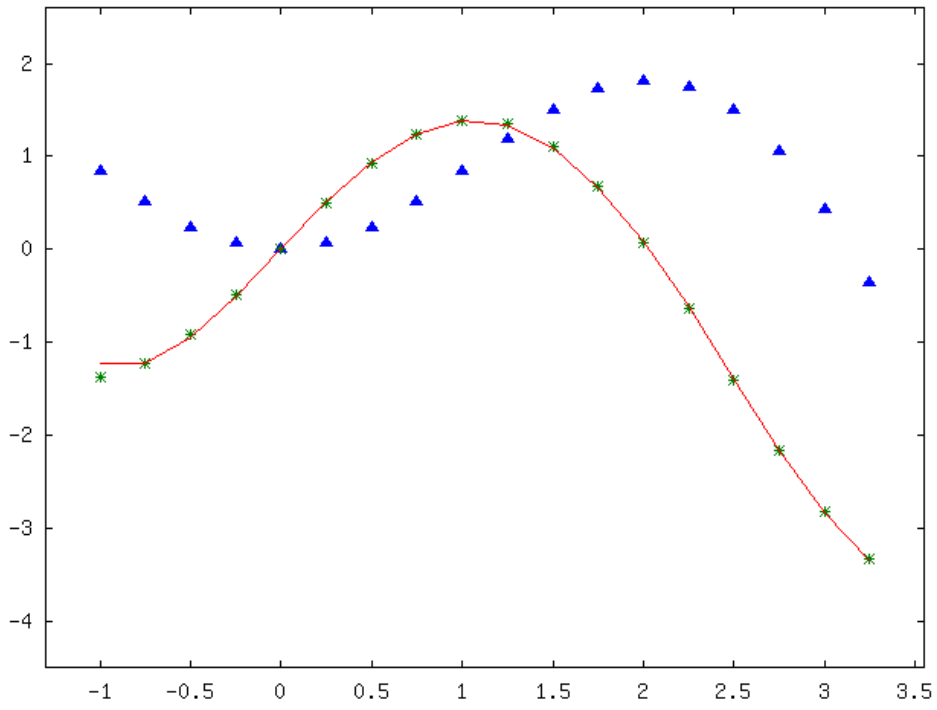
dc5 =

```
   0.00000
   0.16052
  -0.79012
  -0.08774
```

2.09151
0.00277

dc5T =

0.00000 0.16052 -0.79012 -0.08774 2.09151 0.00277



# Octave Code

```
% f(x)=x*sin(x);
% df(x)=sin(x)+x*cos(x);

x=-1:0.25:3.25;
f=x.*sin(x);
df=sin(x)+x.*cos(x);

c5=polyfit(x,f,5);

a1=[0,5,0,0,0,0]'; % (x^5)'=5x^4
a2=[0,0,4,0,0,0]'; % (x^4)'=4x^3
a3=[0,0,0,3,0,0]'; % (x^3)'=3x^2
a4=[0,0,0,0,2,0]'; % (x^2)'=2x
a5=[0,0,0,0,0,1]'; % (x)'=1
a6=[0,0,0,0,0,0]'; % (c)'=0

a=[a1,a2,a3,a4,a5,a6];

dc5=a*c5';
dc5p=polyval(dc5,x);
plot(x,f,'^;f(x);',x,df,'@;df(x)/dt;',x,dc5p,'-;Pdf(x)/dt;');
axis([-1.3,3.55,-4.5,2.6]);

print -dpng workshop2.png

c5
a
c5T=c5'
dc5
dc5T=dc5'
```

# Matlab

c5 =

```
   0.0321   -0.1975   -0.0292    1.0458    0.0028   -0.0070
```

a =

```
    0    0    0    0    0    0
    5    0    0    0    0    0
    0    4    0    0    0    0
    0    0    3    0    0    0
    0    0    0    2    0    0
    0    0    0    0    1    0
```

c5T =

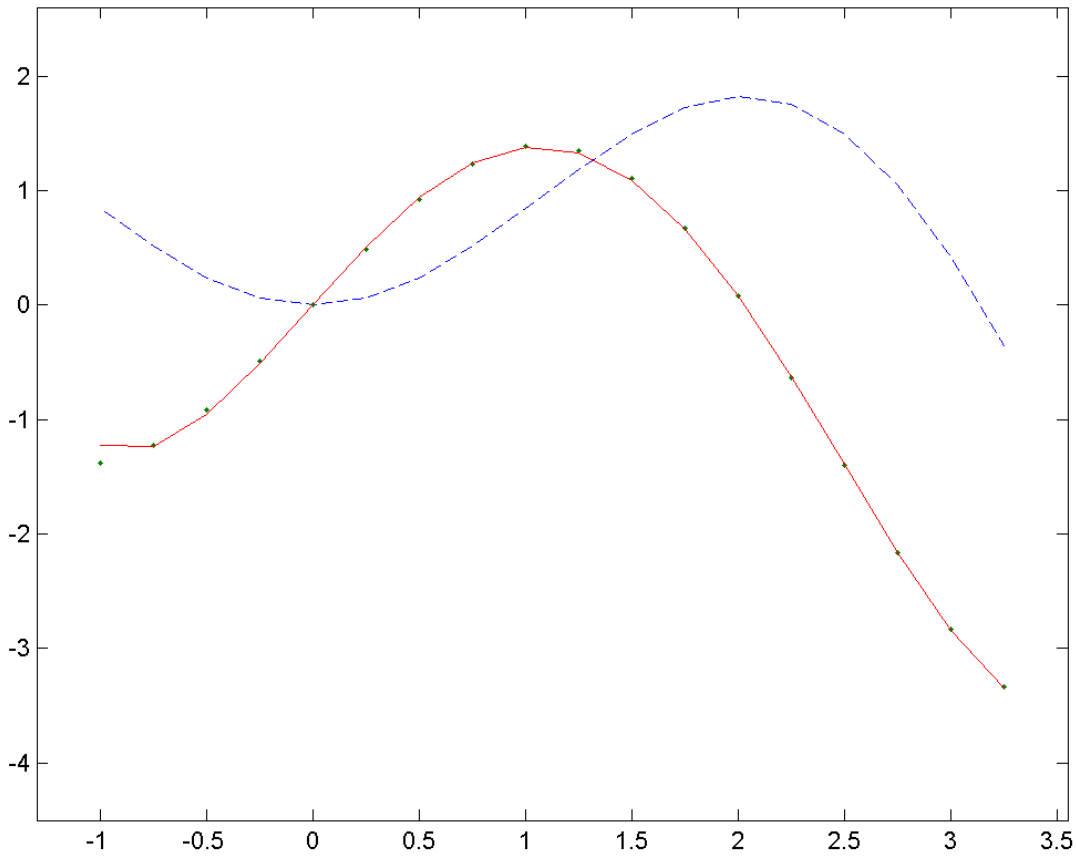
```
   0.0321
  -0.1975
  -0.0292
   1.0458
   0.0028
  -0.0070
```

dc5 =

```
         0
   0.1605
  -0.7901
  -0.0877
   2.0915
   0.0028
```

dc5T =

```
         0    0.1605   -0.7901   -0.0877    2.0915    0.0028
```


2
1
0
-1
-2
-3
-4
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5

# Matlab Code

```
% f(x)=x*sin(x);
% df(x)=sin(x)+x*cos(x);

x=-1:0.25:3.25;
f=x.*sin(x);
df=sin(x)+x.*cos(x);

c5=polyfit(x,f,5);

a1=[0,5,0,0,0,0]'; % (x^5)'=5x^4
a2=[0,0,4,0,0,0]'; % (x^4)'=4x^3
a3=[0,0,0,3,0,0]'; % (x^3)'=3x^2
a4=[0,0,0,0,2,0]'; % (x^2)'=2x
a5=[0,0,0,0,0,1]'; % (x)'=1
a6=[0,0,0,0,0,0]'; % (c)'=0

a=[a1,a2,a3,a4,a5,a6];

dc5=a*c5';
dc5p=polyval(dc5,x);
plot(x,f,'—',x,df,'.',x,dc5p,'-');
axis([-1.3,3.55,-4.5,2.6]);

print -dpng workshop2.png

c5
a
c5T=c5'
dc5
dc5T=dc5'
```