

1.3 Chyby numerických metód.

meps – vzdialenosť čísla 1 od jeho najbližšieho pravého suseda

meps = 1;

while 1 + meps > 1, meps = meps/2; end

meps = 2*meps

meps = 2.2204e-016 = 2*eps

Príklad na neasociatívnosť násobenia v $F(10,3,-9,9)$

$$(0.235*0.345)*0.555=0.811*10^{-1}*0.555 \\ =0.450*10^{-1}$$

$$0.235*(0.345*0.555)=0.235*0.191=0.449*10^{-1}$$

1.4 Tabelovanie a grafy funkcií.

Príklad.

Graf polynómu

$$p(x)=x(x-1)(x-2)(x-3)(x-4)(x-5)=x^6 - 15x^5 + 85x^4 \\ - 225x^3 + 274x^2 - 120x$$

```
x = -1:0.1:6;
```

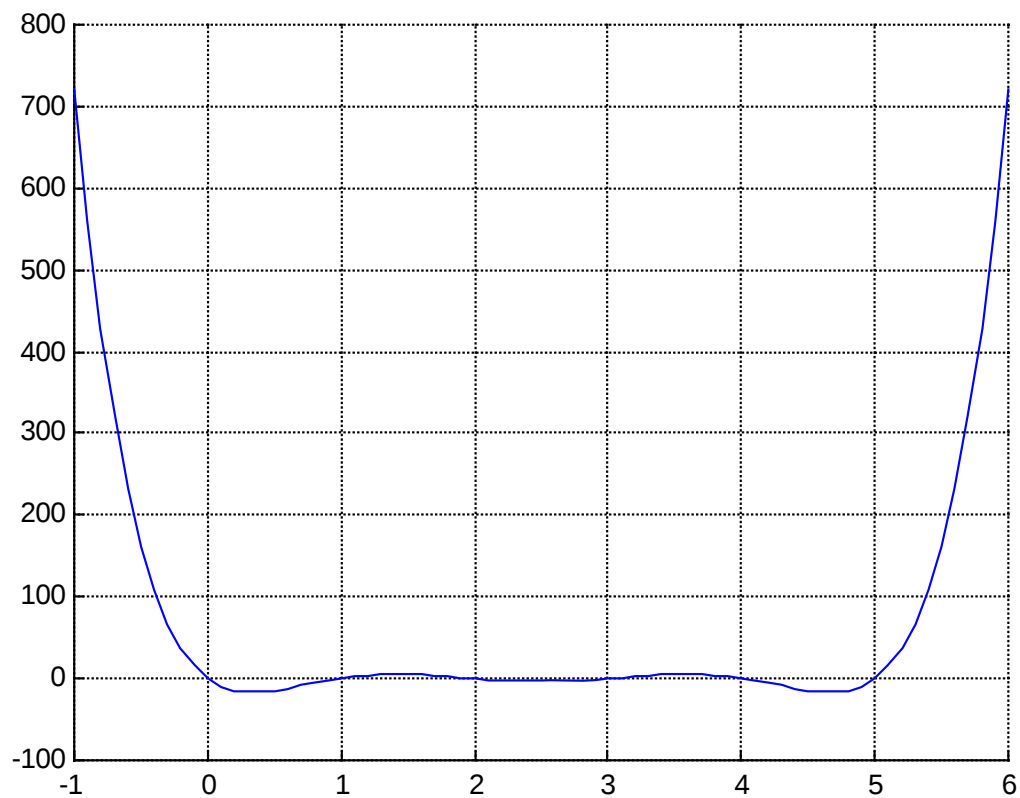
```
%x=linspace(-1,6,71);
```

```
y = prod(ones(6,1)*x-(0:5)'*ones(1,71));
```

```
hold on
```

```
grid on
```

```
plot(x,y)
```

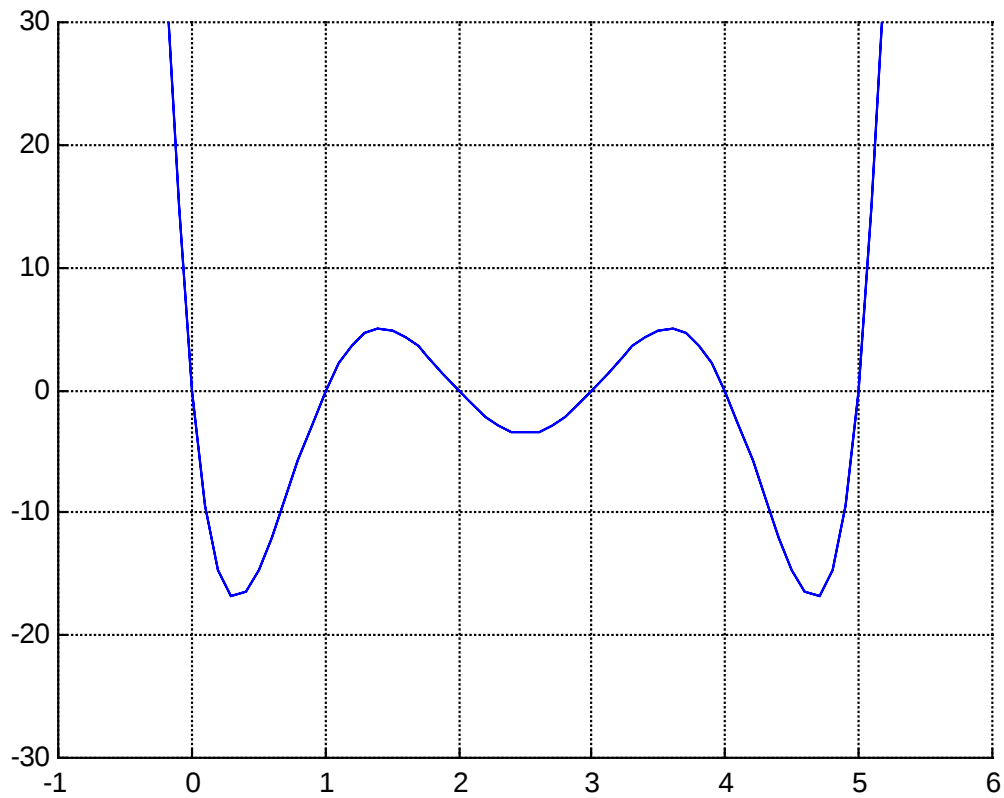


```
pause
```

```
okno = [-1 6 -30 30];
```

```
axis(okno)
```

```
plot(x,y)
```



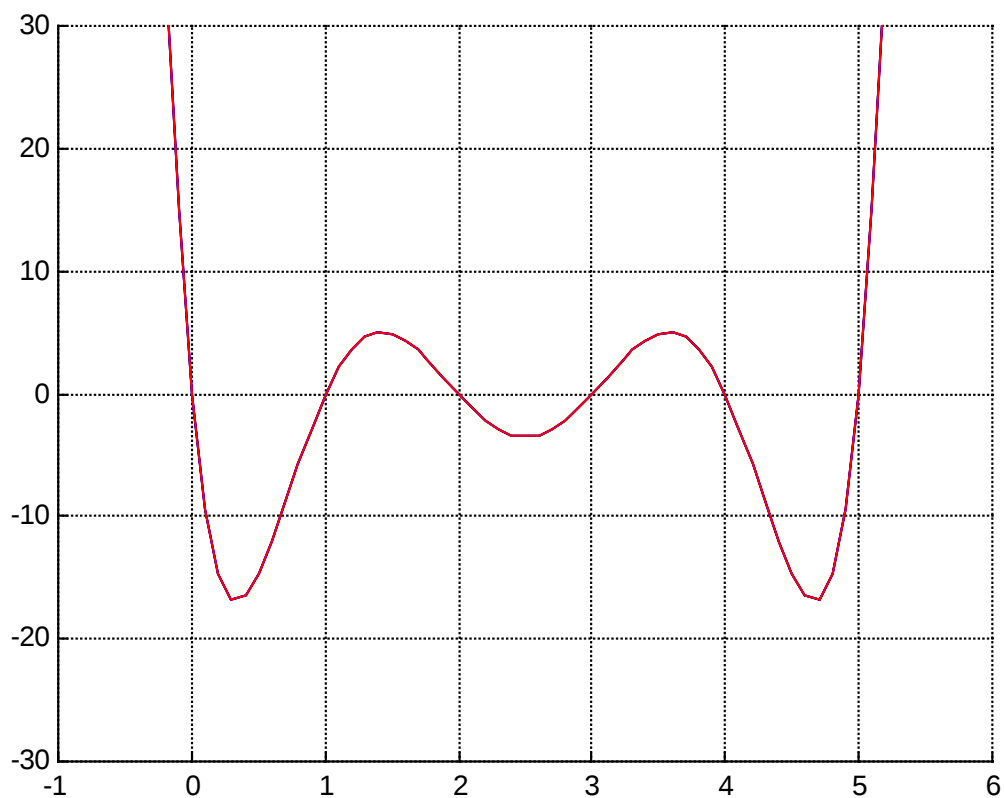
```
pause;
```

```
p6 = polyfit([-1 0 1 2 3 4 5], [720 0 0 0 0 0 0], 6)
```

```
p6 = 1   -15   85  -225  274  -120   0
```

```
z = polyval([1 -15 85 -225 274 -120 0], x);
```

```
plot(x, z, 'r')
```



Znamienkové zmeny

```
x=rand(1,6)*10-5;    % hodnoty argumentu
```

```
x=sort(x)
```

```
y=rand(1,6)*4-2    %hodnoty funkcie
```

```
p=polyfit(x,y,6)    %polynom
```

```
grid on
```

```
%okno=[-1 6 -30 30];
```

```
%axis(okno)
```

```
s=-5:.1:5
```

```
t=polyval(p,s);
```

```
plot(s,t)      %graf
```

```
u=-3:.1:4;
```

```
v=polyval(p,u);
```

```
n=length(u);
```

```
w=v(1:70).*v(2:71);
```

```
skor=find(v(1:70).*v(2:71)<0) % vektor suradnic
```

```
%   znamienkových zmien
```

```
hkor=u(skor)      % vektor
```

```
%   aproximácií koreňov
```