Contents
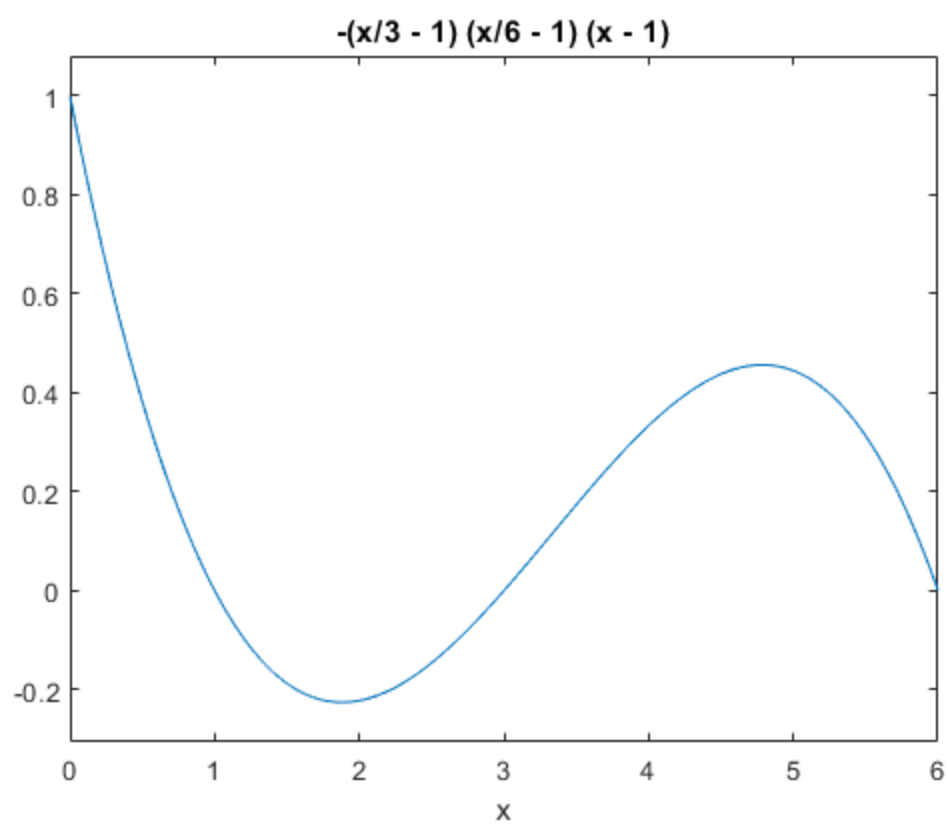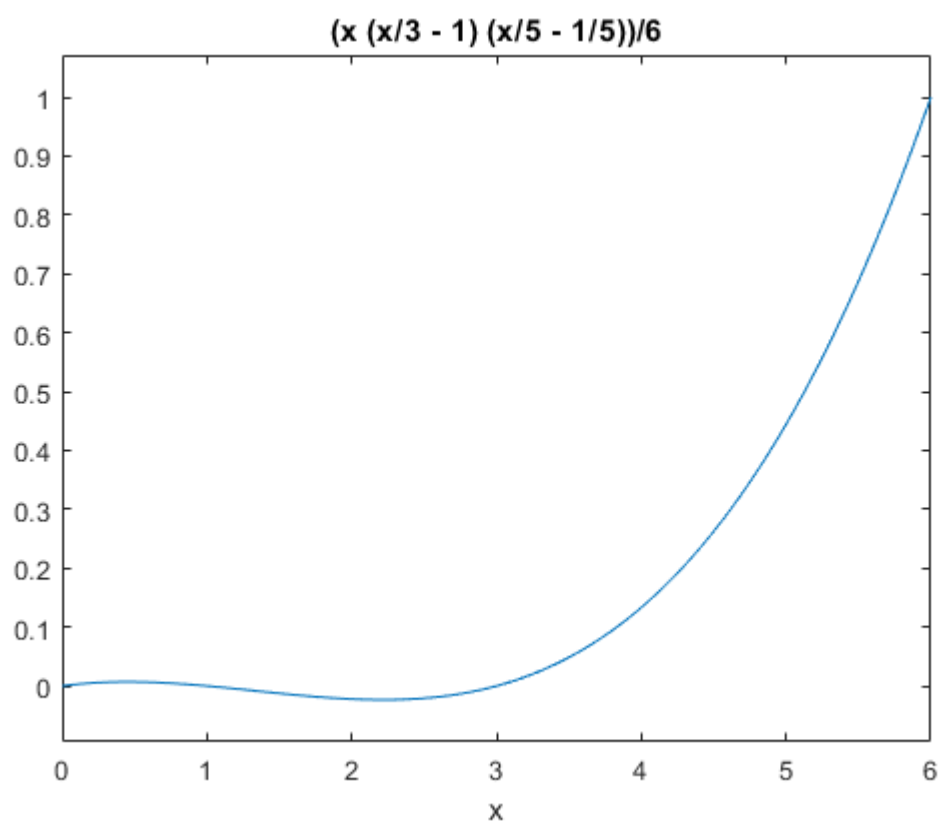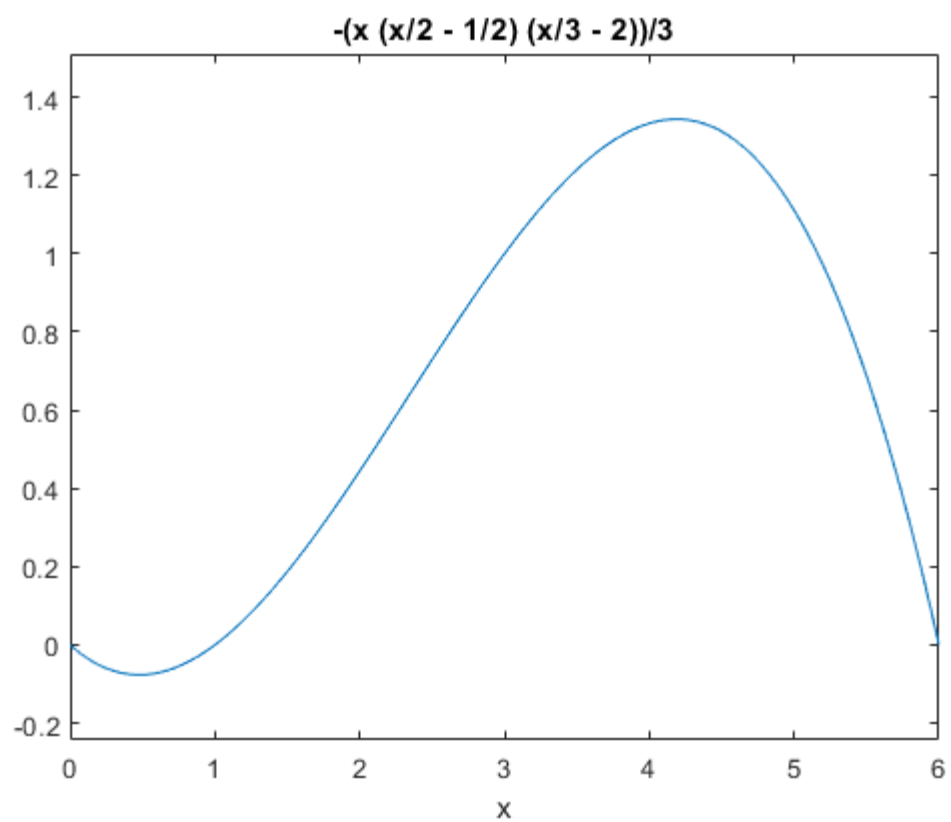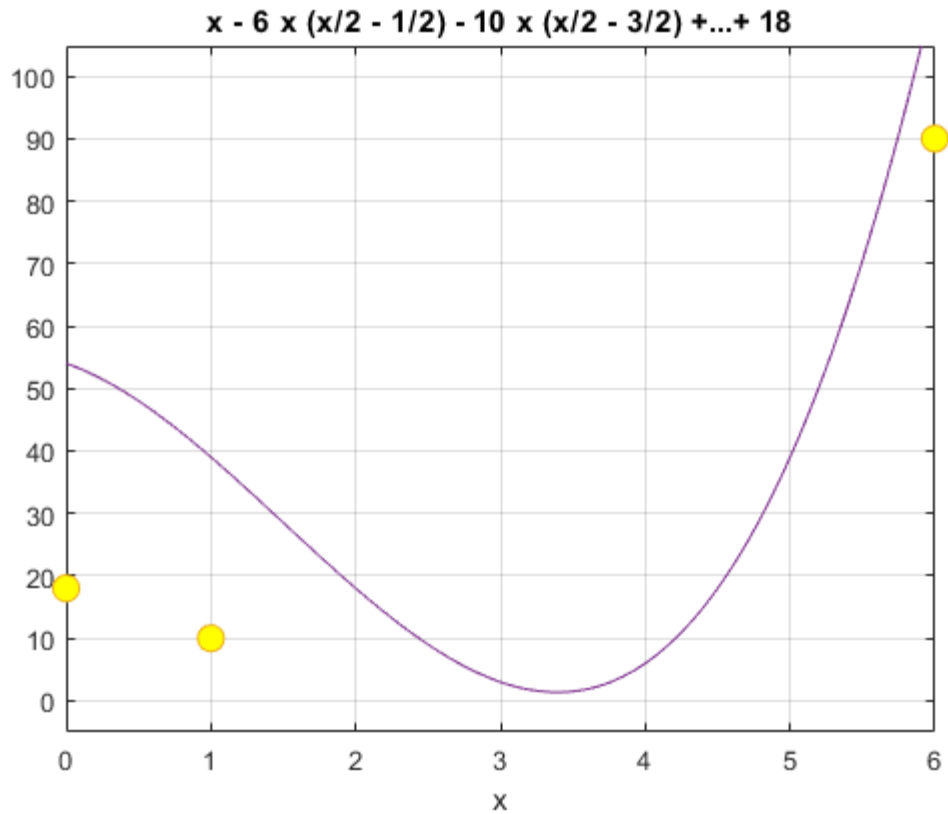
Ex1

```
clear all;

X=[0 1 3 6];
Y=[18 10 -18 90];
P=0;
syms x;
for i=1:length(X)
    Ln=1;
    for k=1:length(X)
        if k~=i
            Ln=Ln*((x-X(k))/(X(i)-X(k)));
            figure(i);
            ezplot(Ln,[0 6])
            P=P+Ln*Y(i);
        end
    end
end
figure(length(X)+1);
plot(X,Y,"o","MarkerFaceColor","y","MarkerSize",10);
hold on;
grid on;
ezplot(P,[0,6]);
```

-(x/3 - 1) (x/6 - 1) (x - 1)

x (x/2 - 3/2) (x/5 - 6/5)

-(x (x/2 - 1/2) (x/3 - 2))/3

(x (x/3 - 1) (x/5 - 1/5))/6

x - 6 x (x/2 - 1/2) - 10 x (x/2 - 3/2) +...+ 18
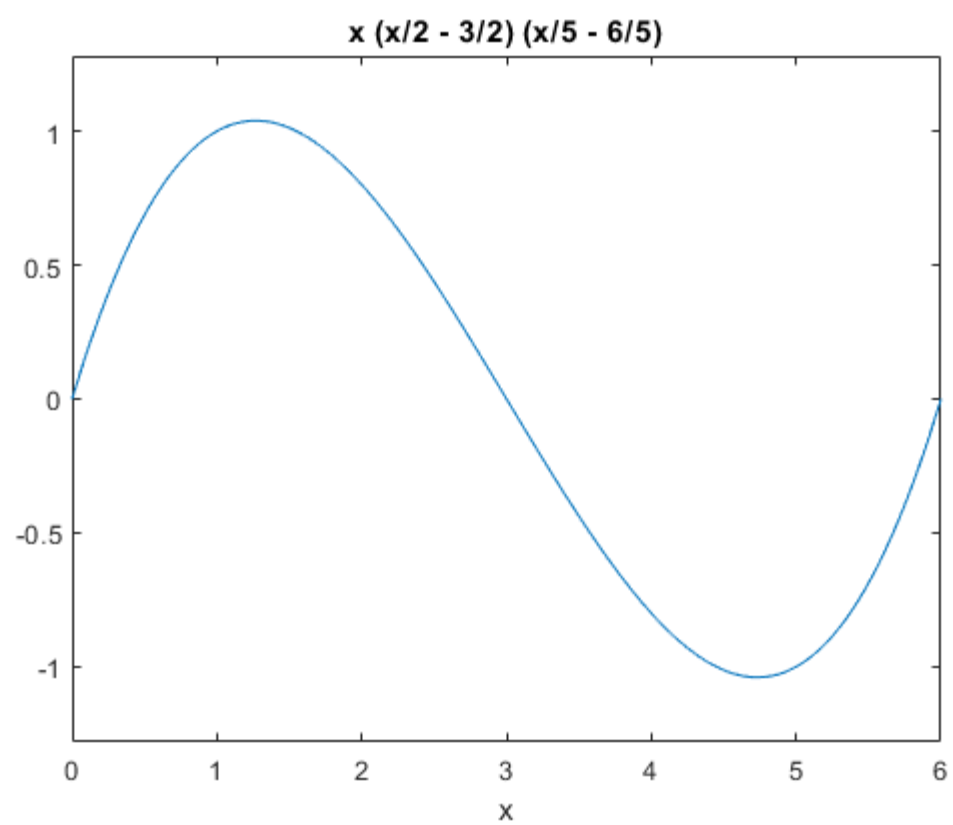
Ex 2

```
X=[ 0.9 1.3 1.9 2.1 2.6 3.0 3.9 4.4 4.7 5.0 6.0 7.0 8.0 9.2 10.5 11.3 11.6 12.0 12.6 13.0 13.3];

Y=[1.3 1.5 1.85 2.1 2.6 2.7 2.4 2.15 2.05 2.1 2.25 2.3 2.25 1.95 1.4 0.9 0.7 0.6 0.5 0.4 0.25];

x=linspace(0.9, 13.3, 100);

P20=NDD(X,Y,x);

figure(6);

for i=1:length(X)
 plot(X(i),Y(i),"o","LineWidth",3);
 grid on;
 hold on;
 axis equal;
end
plot(X,Y,"--r","LineWidth",4);
plot(x, P20,"-b","MarkerSize",5);
title("Rata salbatica");
grid on;
hold on;
type('NDD');
```
```
function [y] = NDD(X,Y,x)

n=length(X)-1;

for i=1:n+1

    Q(i,1)=Y(i);

end
```

```
for i=2:n+1

    for j=2:i

        Q(i,j)=(Q(i,j-1)-Q(i-1,j-1))/(X(i)-X(i-j+1));

    end

end

%Construim polinomul P_n

for i=1:length(x)

P_n(i)=Q(1,1);

for k=2:n+1

    prod=1;

    for j=1:k-1

        prod=prod*(x(i)-X(j));

    end

    P_n(i)=P_n(i)+prod*Q(k,k);

end

end

y=P_n;

end
```

Rata salbatica