ΕΡΓΑΣΤΗΡΙΟ ΑΝΑΟΛΟΓΙΚΟΣ ΚΑΙ ΨΗΦΙΑΚΟΣ ΑΥΤΟΜΑΤΟΣ ΕΛΕΝΧΟΣ

ΕΡΓΑΣΤΗΡΙΑΚΗ ΑΝΑΦΟΡΑ Νο 1

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ΑΣΚΗΣΗ 1

```
a = [ -1 7 ; 3 1 ] ;
b1 = [ 0 4 ; 1 2] ; %tl20412
b2 = [ 0 4 ; 1 1 ]; %tl20411
b3 = [ 0 4 ; 4 1 ]; %tl20441

disp(a+b1)
disp(a+b2)
disp(a+b3)

disp(a-b1)
disp(a-b2)
disp(a-b3)

disp(a./b1)
disp(a./b2)
disp(a./b3)

disp(a.*b1)
disp(a.*b2)
disp(a.*b3)

disp(a.*(b1'))
disp(a.*(b2'))
disp(a.*(b3'))
```

ΑΣΚΗΣΗ 2

```matlab
syms x ;
m = 4 ; %tl20412
p = 2 ;
k = 0 ;

f = 3*x^4 + (m+1)*x^2 - p ; %f(x) equation construction
q = (k+2)*x^2 + p  ;     %q(x) equation construction

y = solve(f); %the roots of f(x) polyonim will be saved on vector y {4}
z = solve(q); %the roots of q(x) polyonim will be saved on vector z {2}

figure(1)   %in figure 1 we will draw f(x) and q(x)
ezplot(f)
hold on ;
ezplot(q)
legend('f' , 'q')
```
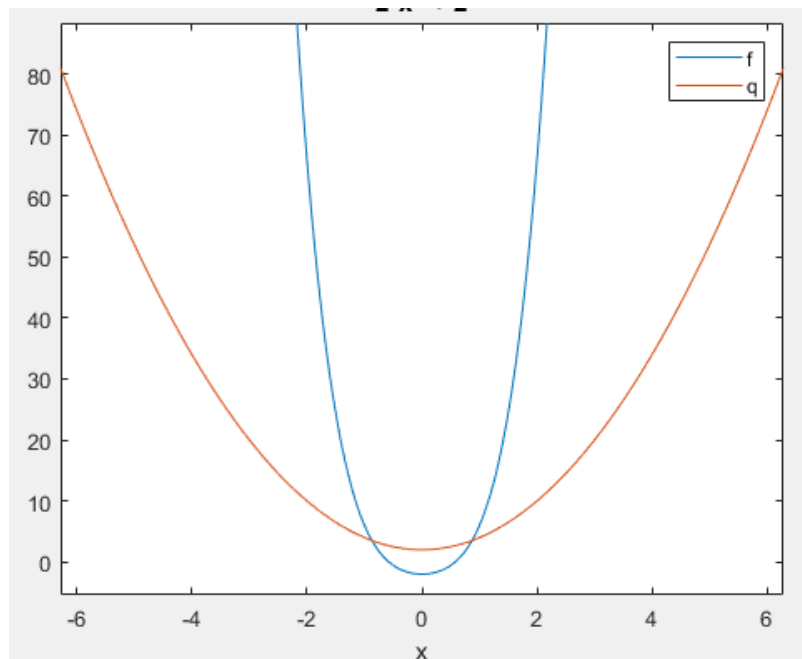
Ο παραπάνω κώδικας εμφανίζει το εξής γράφημα :

ΑΣΚΗΣΗ 3

```matlab
x = [-4 :.01:4] ;

p = 2 ; %tl20412
n = 1 ;

y = cos((2+n).*x) + sin(x).^2 + p ; %y(x) equation construction

figure(1);  %draw y(x) in figure 1
plot(x,y);
xlabel("time")
ylabel("amplitude")
hold on ;

z = x.^2-3 ;      %z(x) equation construction
plot(x,z)         %which will be shown at the same figure as y(x)

legend('y','z')
title("EQUATIONS");
```
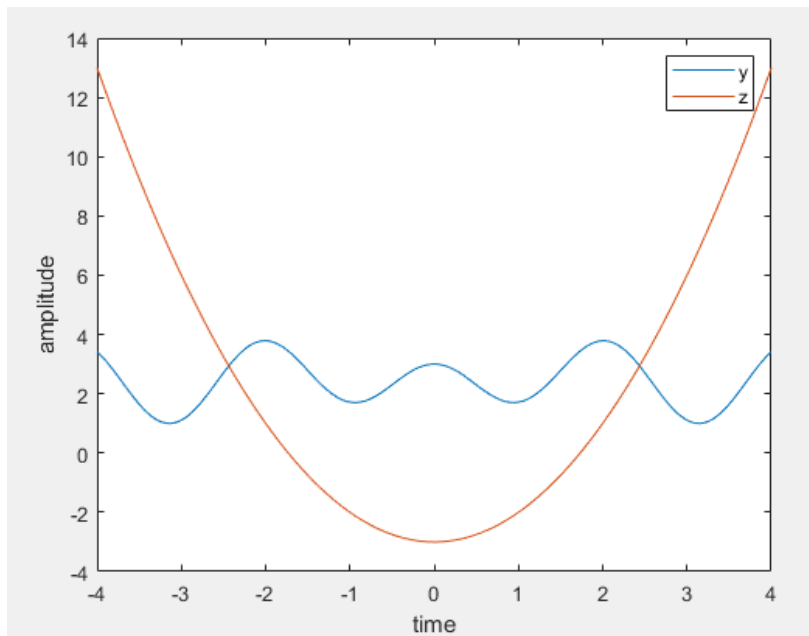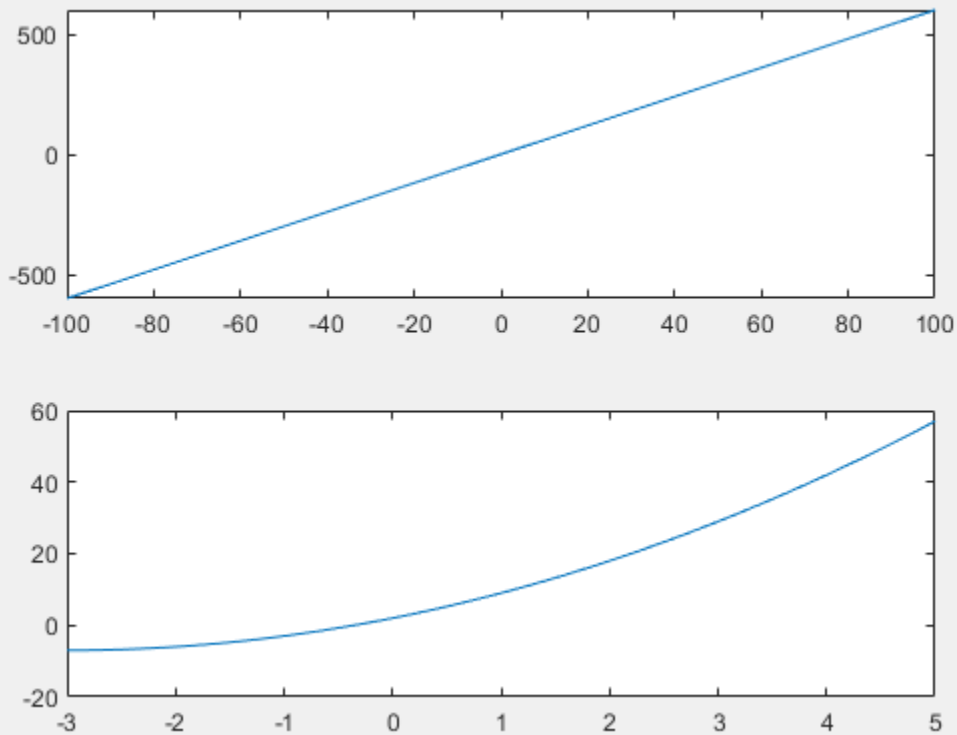

ΑΣΚΗΣΗ 4

```matlab
a = 6 ; %kosmas
p = 2 ; %tl20412
x1 = [-100 : .1 : 100] ;
x2 = [-3 : .1 : 5];

y = a.*x1 + p ; %y(x) equation construction
g = x2.^2 +a.*x2 + p ; %g(x) equation construction

figure(1);
subplot(2,1,1) %split figure 1 into 2 subplots
plot(x1,y) %draw y(x) in subplot 1

subplot(2,1,2) %draw g(x) in subplot 2
plot(x2, g)
```


ΑΣΚΗΣΗ 5

```matlab
function [y,z,p,root , max , min , maxdim , mindim,sr ,sc , sall] = ask_5(a)

[nr , nc ] = size(a);
max = a(1,1);
min = a(1,1);
maxdim = [1 1];
mindim = [1 1];

if nc==nr
    y = det(a);
    if y~= 0
        z = inv(a);
        p = poly(a);
        root = roots(p);
    else
        z = [];
        p = [];
        root = [];
        disp("DET OF MATRIX IS 0: can not calclate inverse matrix, it's polyonim and roots")
    end

else
    y =[];
    disp("The matrix is not square")
end

for r = 2 : 1 : nr
    for c = 2 : 1 : nc
        if a(r,c)>max
            max = a(r,c);
            maxdim = [ r c ] ;
        end
        if a(r,c)<min
            min = a(r,c);
            mindim = [ r c ];
        end
    end
end
sr = sum(a);
sc = sum(a');
sall = sum(a , 'all');
```