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## EX 1, TEMA 1

```
a=1;b=4;c=2;
ec2(a,b,c);
a=2;b=4;c=2;
ec2(a,b,c);
a=1;b=-1;c=2;
ec2(a,b,c);
type('ec2');
```

```
x1 =
```

```
-0.5858
```

```
x2 =
```

```
-3.4142
```

```
x1 =
```

```
-4
```

```
x2 =
```

```
-4
```

```
x1 =
```

```
0.5000 + 1.3229i
```

```
x1 =
```

---

$0.5000 - 1.3229i$

```
function [x1,x2] = ec2(a,b,c)

d=b*b-4*a*c;
if d>=0
    x1=(-b+sqrt(d))/2*a
    x2=(-b-sqrt(d))/2*a
elseif d<0
    x1=(-b+i*sqrt(-d))/2*a
    x1=(-b-i*sqrt(-d))/2*a

end
end
```

## EX 2, TEMA 1

```
f2(0.5)

f2(2.5)

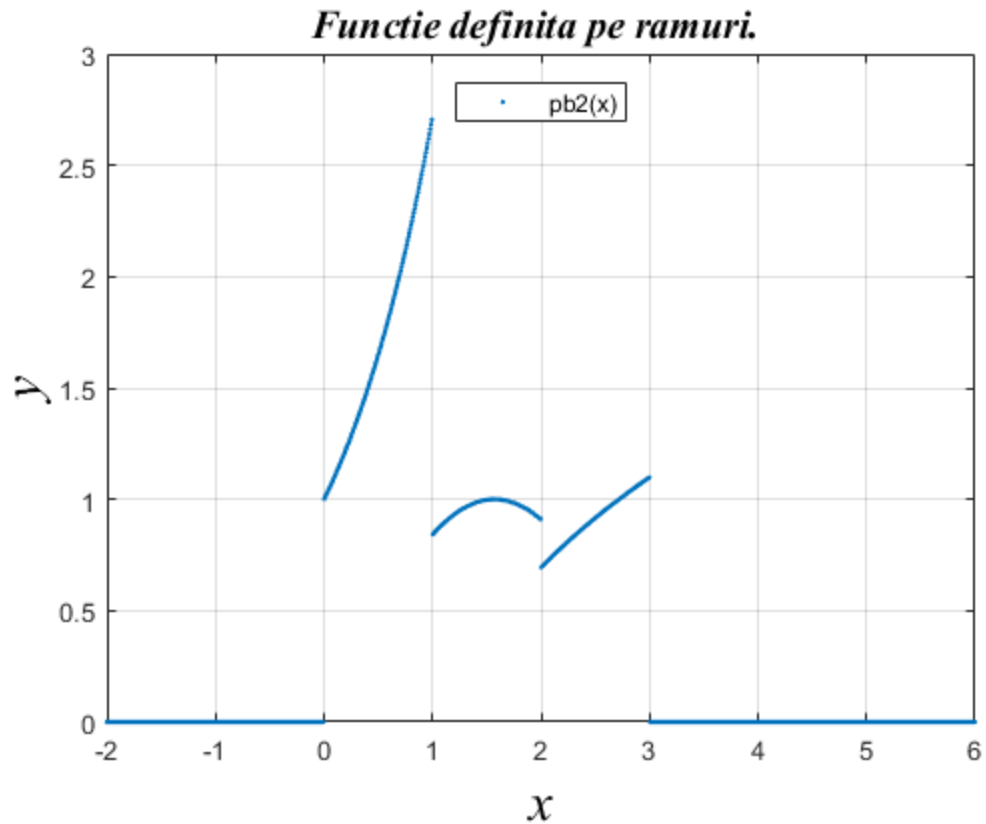
x=linspace(-2,6,1000);
for i=1:length(x)
    y(i)=f2(x(i));
end
plot(x,y, '.', 'markersize',5)
title('Functie definita pe ramuri.
', 'FontAngle', 'italic', 'FontName', 'Times New
Roman', 'FontSize', 15, 'Color', 'k')
xlabel('x', 'FontAngle', 'italic', 'FontName', 'Times New
Roman', 'FontSize', 20, 'Color', 'k')
ylabel('y', 'FontAngle', 'italic', 'FontName', 'Times New
Roman', 'FontSize', 20, 'Color', 'k')
grid on
legend('pb2(x)', 'Location', 'North')

ans =

    1.6487

ans =

    0.9163
```



## EX 3, TEMA 1

```
a = [-1 4 2 4 4 -1 0 2 3 0];
fprintf('Maximul din vector este ');
f3(a);
type('f3');
```

Maximul din vector este 4

```
function[max]=f3(a)
max=a(1);
for i=1:length(a)
    if(a(i)>max)
        max=a(i);
    end
end
disp(max)
```

## EX 4, TEMA 1

```
a = [6 7 8 9 10]
fprintf('Noul vector este ');
f4(a);
type('f4');
```

---

```

a =

      6      7      8      9     10

Noul vector este      10      9      8      7      6

```

```

function[b]=f4(a)
for i=1:length(a)
    b(length(a)-i+1)=a(i);
end
disp(b)

```

## EX 5, TEMA 1

```

f5(3/4);
type('f5');

s10=      0.7499

s20=      0.7500

s30=      0.7500

ea10=     9.7377e-05

ea20=     3.0831e-09

ea30=     7.6494e-14

er10=      0.0130

er20=     4.1108e-07

er30=     1.0199e-11

nr. minim de termeni astfel incat er sa nu depaseasca 3% este:      5

```

```

function[s10,s20,s30,ea10,ea20,ea30,er10,er20,er30,nr]=f5(s)
s=3/4;
ermax=3/100;
s10=0;
s20=0;
s30=0;
nr=1;
k=1;
sn=0;
for i=1:10
    s10=s10+i/3^i;
end
for i=1:20

```

---

```

        s20=s20+i/3^i;
    end
    for i=1:30
        s30=s30+i/3^i;
    end
    ea10=abs(s-s10);
    ea20=abs(s-s20);
    ea30=abs(s-s30);
    er10=ea10/abs(s)*100;
    er20=ea20/abs(s)*100;
    er30=ea30/abs(s)*100;
    fprintf('s10=');
    disp(s10);
    fprintf('s20=');
    disp(s20);
    fprintf('s30=');
    disp(s30);
    fprintf('ea10=');
    disp(ea10);
    fprintf('ea20=');
    disp(ea20);
    fprintf('ea30=');
    disp(ea30);
    fprintf('er10= ');
    disp(er10);
    fprintf('er20=');
    disp(er20);
    fprintf('er30=');
    disp(er30);
    while k
        sn=sn+nr/3^nr;
        if abs(s-sn)/abs(s)<=ermax
            k=0;
        end
        nr=nr+1;
    end
    fprintf('nr. minim de termeni astfel incat er sa nu depaseasca 3%%
    este:')
    disp(nr-1);

```

## PCT A, TEMA 2

```

f=@(x)sin(x)-exp(-x);
x=linspace(0,10,100);
y=f(x);
plot(x,y,'Linewidth',3)
hold on
grid on
[interval]=cautainterval(f,0,10,50)
for i=1: size(interval,1)
    x1=interval(i,1)
    x2=interval(i,2)

```

---

```

        fill([x1 x1 x2 x2 x1],[-0.3,0.3,0.3,-0.3,-0.3],[0.7 0.3 0.9 0.5
0.7])
        r(i)=met_bis(f,x1,x2,10^(-3));
end
plot(r,f(r),'o','Markerfacecolor','y','Markersize',10)

```

```
x =
```

```
Columns 1 through 7
```

```

0      0.2000      0.4000      0.6000      0.8000      1.0000      1.2000

```

```
Columns 8 through 14
```

```

1.4000      1.6000      1.8000      2.0000      2.2000      2.4000      2.6000

```

```
Columns 15 through 21
```

```

2.8000      3.0000      3.2000      3.4000      3.6000      3.8000      4.0000

```

```
Columns 22 through 28
```

```

4.2000      4.4000      4.6000      4.8000      5.0000      5.2000      5.4000

```

```
Columns 29 through 35
```

```

5.6000      5.8000      6.0000      6.2000      6.4000      6.6000      6.8000

```

```
Columns 36 through 42
```

```

7.0000      7.2000      7.4000      7.6000      7.8000      8.0000      8.2000

```

```
Columns 43 through 49
```

```

8.4000      8.6000      8.8000      9.0000      9.2000      9.4000      9.6000

```

```
Columns 50 through 51
```

```

9.8000      10.0000

```

```
interval =
```

```

0.4000      0.6000
3.0000      3.2000
6.2000      6.4000
9.4000      9.6000

```

```
x1 =
```

```

0.4000

```

---

$x_2 =$

$0.6000$

$x_1 =$

$3$

$x_2 =$

$3.2000$

$x_1 =$

$6.2000$

$x_2 =$

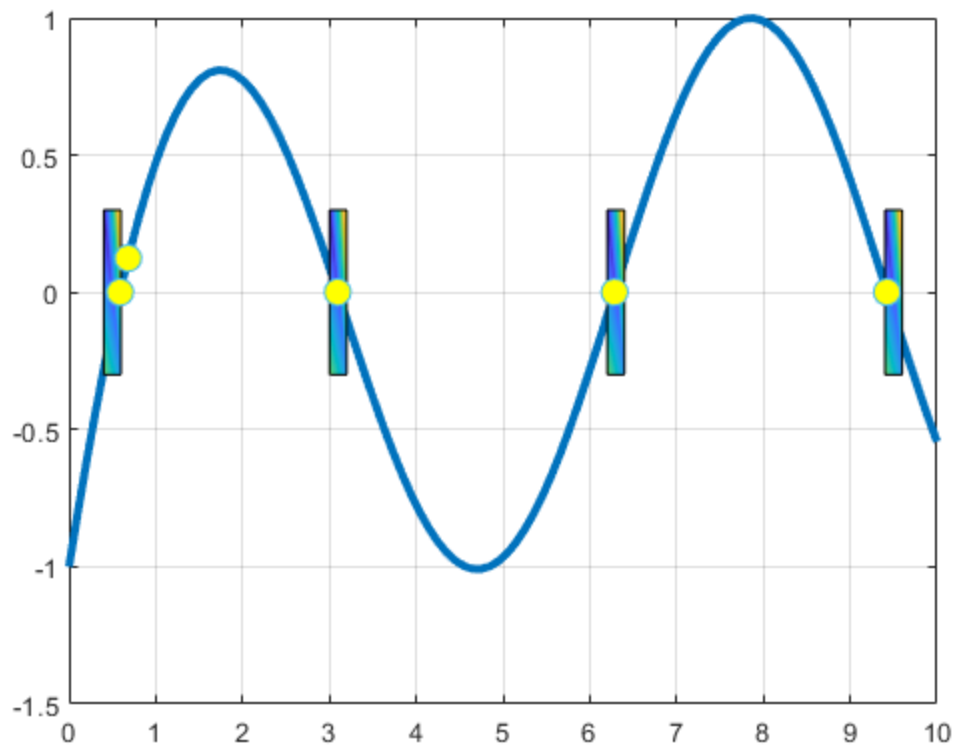
$6.4000$

$x_1 =$

$9.4000$

$x_2 =$

$9.6000$



## PCT B, TEMA 2

```
type('MetSecantei');
```

```
function [ xaprox ] = MetSecantei(f,a,b,x0,x1,eps)
```

```

    k=2;
    x(1)=x0;
    x(2)=x1;
    while (abs(x(k)-x(k-1))/abs(x(k-1))>=eps)
        k=k+1;
        x(k)=(x(k-2)*f(x(k-1))-x(k-1)*f(x(k-2)))/(f(x(k-1))-
f(x(k-2)));
        if x(k)< a | x(k)>b
            warning('introduceti alte valori pentru x0,x1');
            break;
        end
    end
    xaprox=x(k);
end
```



---

## PCT C, TEMA 2

```
type('MetPozFalse');

function [ xaprox ]=MetPozFalse(f,A,B,eps)
a(1)=A;
b(1)=B;
k=1;
cond=1;
x(1)=(a(1)*f(b(1))-b(1)*f(a(1)))/(f(b(1))-f(a(1)));
while (cond==1)
    k=k+1;
    if f(x(k-1))==0
        x(k)=x(k-1);
        break;
    elseif f(a(k-1))*f(x(k-1))<0
        a(k)=a(k-1);
        b(k)=x(k-1);
        x(k)=(a(k)*f(b(k))-b(k)*f(a(k)))/(f(b(k))-f(a(k)));
    elseif f(a(k-1))*f(x(k-1))>0
        a(k)=x(k-1);
        b(k)=b(k-1);
        x(k)=(a(k)*f(b(k))-b(k)*f(a(k)))/(f(b(k))-f(a(k)));
    end
    if abs(x(k)-x(k-1))/abs(x(k-1))<eps
        cond=0;
    end
    xaprox=x(k);
end
```

## PCT D, TEMA 2

```
f=@(x)sin(x)-exp(-x);
x=linspace(0,10,100);
y=f(x);
plot(x,y,'Linewidth',3)
hold on
grid on
[interval]=cautainterval(f,0,10,50)
for i=1: size(interval,1)
    x1=interval(i,1)
    x2=interval(i,2)
    fill([x1 x1 x2 x2 x1],[-0.3,0.3,0.3,-0.3,-0.3],[0.7 0.3 0.9 0.5
0.7])
    r(i)=MetSecantei(f,x1,x2,x1,x2,10^(-3));
end
plot(r,f(r),'o','Markerfacecolor','y','Markersize',10)

x =
```

---

```

Columns 1 through 7
      0      0.2000      0.4000      0.6000      0.8000      1.0000      1.2000

Columns 8 through 14
      1.4000      1.6000      1.8000      2.0000      2.2000      2.4000      2.6000

Columns 15 through 21
      2.8000      3.0000      3.2000      3.4000      3.6000      3.8000      4.0000

Columns 22 through 28
      4.2000      4.4000      4.6000      4.8000      5.0000      5.2000      5.4000

Columns 29 through 35
      5.6000      5.8000      6.0000      6.2000      6.4000      6.6000      6.8000

Columns 36 through 42
      7.0000      7.2000      7.4000      7.6000      7.8000      8.0000      8.2000

Columns 43 through 49
      8.4000      8.6000      8.8000      9.0000      9.2000      9.4000      9.6000

Columns 50 through 51
      9.8000      10.0000

interval =

      0.4000      0.6000
      3.0000      3.2000
      6.2000      6.4000
      9.4000      9.6000

x1 =

      0.4000

x2 =

      0.6000

x1 =

      3

```

---

---

$x_2 =$

3.2000

$x_1 =$

6.2000

$x_2 =$

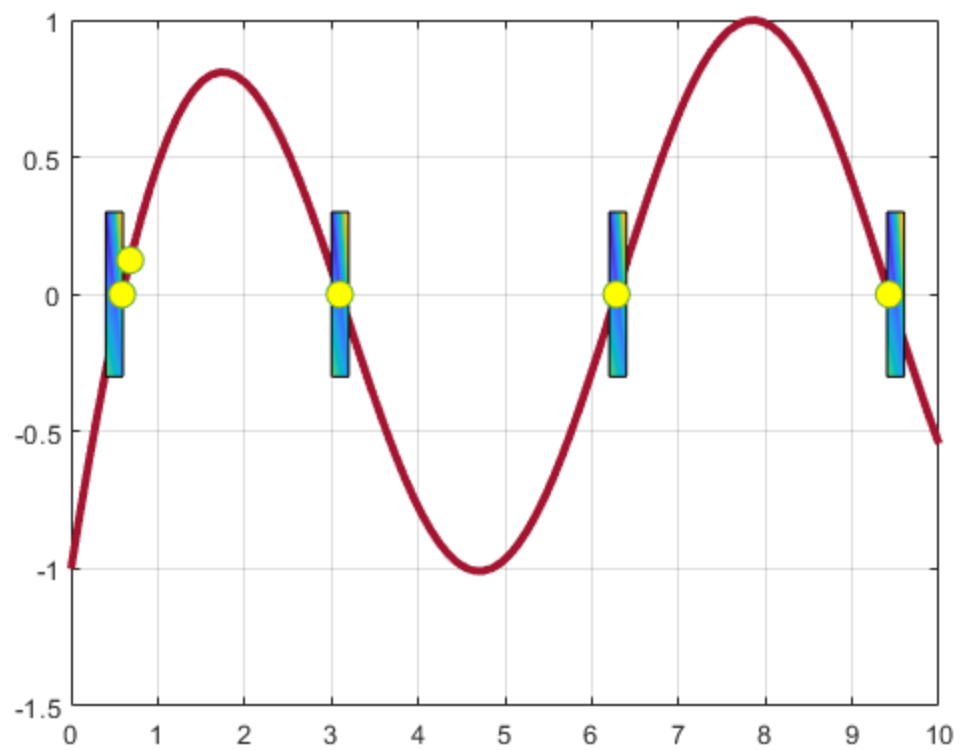
6.4000

$x_1 =$

9.4000

$x_2 =$

9.6000



---

## PCT E, TEMA 2

```
f=@(x)sin(x)-exp(-x);
x=linspace(0,10,100);
y=f(x);
plot(x,y,'Linewidth',3)
hold on
grid on
[interval]=cautainterval(f,0,10,50)
for i=1: size(interval,1)
    x1=interval(i,1)
    x2=interval(i,2)
    fill([x1 x1 x2 x2 x1],[-0.3,0.3,0.3,-0.3,-0.3],[0.7 0.3 0.9 0.5
0.7])
    r(i)=MetPozFalse(f,x1,x2,10^(-3));
end
plot(r,f(r),'o','Markerfacecolor','y','Markersize',10)
```

x =

Columns 1 through 7

0	0.2000	0.4000	0.6000	0.8000	1.0000	1.2000
---	--------	--------	--------	--------	--------	--------

Columns 8 through 14

1.4000	1.6000	1.8000	2.0000	2.2000	2.4000	2.6000
--------	--------	--------	--------	--------	--------	--------

Columns 15 through 21

2.8000	3.0000	3.2000	3.4000	3.6000	3.8000	4.0000
--------	--------	--------	--------	--------	--------	--------

Columns 22 through 28

4.2000	4.4000	4.6000	4.8000	5.0000	5.2000	5.4000
--------	--------	--------	--------	--------	--------	--------

Columns 29 through 35

5.6000	5.8000	6.0000	6.2000	6.4000	6.6000	6.8000
--------	--------	--------	--------	--------	--------	--------

Columns 36 through 42

7.0000	7.2000	7.4000	7.6000	7.8000	8.0000	8.2000
--------	--------	--------	--------	--------	--------	--------

Columns 43 through 49

8.4000	8.6000	8.8000	9.0000	9.2000	9.4000	9.6000
--------	--------	--------	--------	--------	--------	--------

Columns 50 through 51

9.8000	10.0000
--------	---------

---

```
interval =  
  
    0.4000    0.6000  
    3.0000    3.2000  
    6.2000    6.4000  
    9.4000    9.6000
```

```
x1 =  
  
    0.4000
```

```
x2 =  
  
    0.6000
```

```
x1 =  
  
    3
```

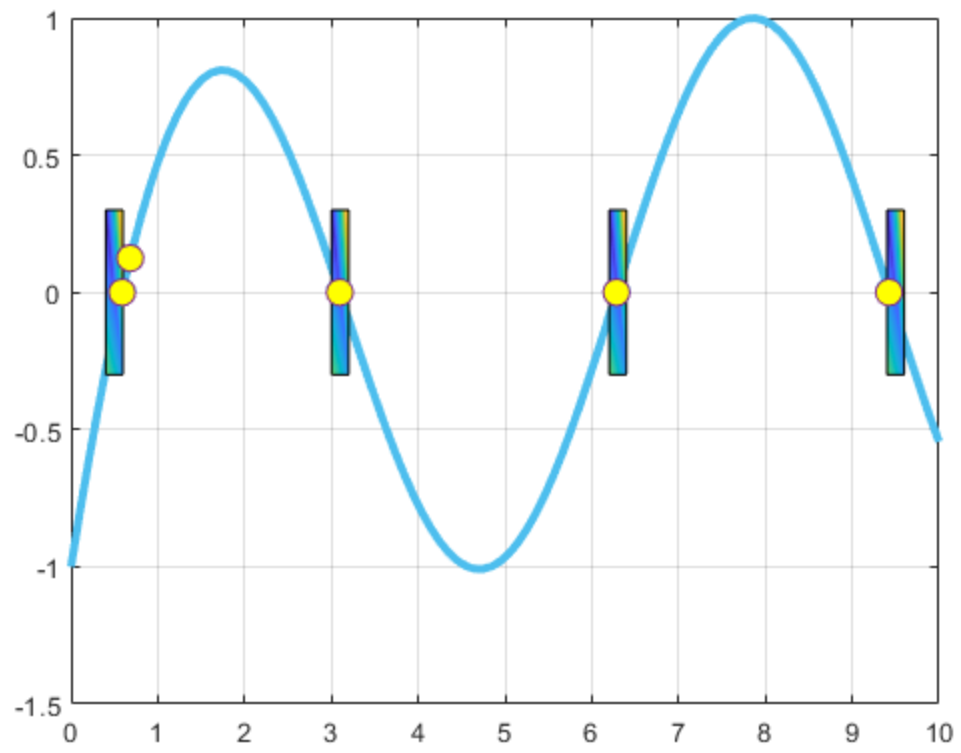
```
x2 =  
  
    3.2000
```

```
x1 =  
  
    6.2000
```

```
x2 =  
  
    6.4000
```

```
x1 =  
  
    9.4000
```

```
x2 =  
  
    9.6000
```



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