

Zadatak 10

type `trapez.m`

```
function I=trapez(a,b)
n=9;
X=linspace(a,b,n);
funkcija;
Y=f(X);
h=X(2)-X(1);
I=(h/2)*(Y(1)+2*sum(Y(2:n-1))+Y(n));
```

type `simps.m`

```
function I=simps(a,b)
n=9;
funkcija;
X=linspace(a,b,n);
Y=f(X);
h=X(2)-X(1);
I=(h/3)*(Y(1)+2*sum(Y(3:2:end-1))+4*sum(Y(2:2:end-1))+Y(n));
```

type `vredfunk.m`

```
function [X,Y]=vredfunk(k,p)
X=2:k;
Y=zeros(1,k-1);
for i=1:k-1
    if p==1
        Y(i)=simps(1,X(i));
    elseif p==2
        Y(i)=trapez(1,X(i));
    end
end
end
```

type `funkcija.m`

```
%funkcija.m
f=@(x) cos(x).*exp(x);
```

`[X,Y]=vredfunk(10,1)`

```
X = 1×9
    2     3     4     5     6     7     8     9    10
Y = 1×9
104 ×
-0.0000    -0.0010    -0.0040    -0.0052     0.0135     0.0766     0.1236    -0.2008 ...
```

`[X,Y]=vredfunk(10,2)`

```
X = 1×9
    2     3     4     5     6     7     8     9    10
Y = 1×9
104 ×
-0.0000    -0.0011    -0.0040    -0.0048     0.0152     0.0778     0.1044    -0.2927 ...
```

Zadatak 11

type `integralt.m`

```

function [I,briter]=integralt(a,b,tol)
n=3;
I1=trapez(a,b,n);
n=2*n-1; % n+n-1 cvor
I2=trapez(a,b,n);
briter=2;
while(abs(I1-I2)/3>tol)
    I1=I2;
    n=2*n-1; % n+n-1 cvor
    I2=trapez(a,b,n);
    briter=briter+1;
end
I=I2;

function I=trapez(a,b,n)
X=linspace(a,b,n);
Funkcija;
Y=f(X);
h=X(2)-X(1);
I=(h/2)*(Y(1)+2*sum(Y(2:end-1))+Y(end));

```

type **integrals.m**

```

function [I,briter]=integrals(a,b,tol)
n=3;
I1=simps(a,b,n);
n=2*n-1; % n+n-1 broj cvorova u novoj iteraciji
I2=simps(a,b,n);
briter=2;
while(abs(I1-I2)/15>tol)
    I1=I2;
    n=2*n-1;
    I2=simps(a,b,n);
    briter=briter+1;
end
I=I2;

function I=simps(a,b,n)
X=linspace(a,b,n);
Funkcija;
Y=f(X);
h=X(2)-X(1);
I=(h/3)*(Y(1)+4*sum(Y(2:2:end-1))+2*sum(Y(3:2:end-1))+Y(end));

```

type **Funkcija.m**

```
f=@(x) sin(x).*exp(x);
```

```
[I,briter]=integrals(-1,2,1e-4)
```

```

I =
5.1510
briter =
5

```

```
[I,briter]=integralt(-1,2,1e-4)
```

```

I =
5.1511
briter =
8

```

