6.Laboratorijas darbs

Table of Contents

Videjas un efektivas vertibas noteiksana

```
g1 = double(int(-0.5*sin(2*pi*(x-0.5)*6),0,1.45)); %sinuss
g2 = double(int(0*x, x, 1.45, 2)); %nulles sign#ls
g3 = double(int(k*(x+0.5),x, 2, 3)); %line#ri main#gs
g4 = double(int(0*x, x, 3, 4.5)); %trokš#a
g5 = double(int(0*x+3, x, 4.5, 5.5)); %nulles sign#ls
% Videjas vertibas noteiksana

syms x

k=-0.5;
deltaT=4.5;
% Videjas vertibas meklesana
% izmantojot matlaba iebuveto skaitlisko integresanu
```

Ka rekinat efektivo vertibu

1.Patiesa efektiva vertiba

```
vid = (g1+g2+g3+g4+g5)/5; %j#uzskata par pareizo
disp('patiesa videja vertiiba'),vid,
ef1 = double((int(-0.5*sin(2*pi*(x-0.5)*6),0,1.45))^2/1.45  );
ef2 = double((int((0*x)^2, x, 1.45, 2))/0.55  );
ef3 = double((int((k*(x+0.5))^2,x, 2, 3))/1  );
ef4 = double((int((0*x)^2, x, 3, 4.5))/0.5  );
ef5 = double((int((0*(x+3))^2, x, 4.5, 5.5))/1  );
```

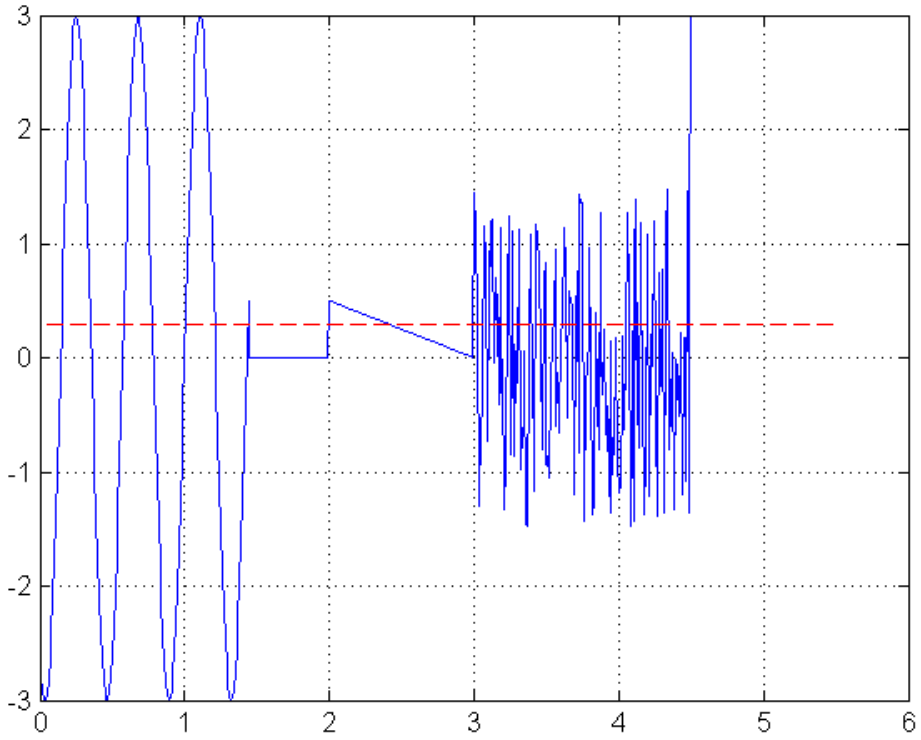
```
patiesa videja vertiiba

vid =

    0.2965
```

Ka rekinat efektivo vertibu(2)

Kas kapina to kvadrata

```
ef = (sqrt((ef1+ef2+ef3+ef4+ef5)/5));
disp('patiesa efektiva vertiiba'),ef,
%xv3c=1/(N-1)*(sum(sig(t(1:end)+h/2)))
sigkv = @(t) lab3_gabrans(t).^2;

dt = [0.1 0.01 0.001 0.0001];
for dtc=dt

    t=0:dtc:5.5;
    h=dtc;
    N = length(t);
    xv3c=1/(N-1)*(sum(lab3_gabrans(t(1:end-1)+h/2)));
        xef3c=sqrt(1/(N-1)*(sum(sigkv(t(1:end-1)+h/2))));

    fprintf('|dt=%0.4f\t|vv=%f\t||ef=%f\t|\n',dtc,xv3c,xef3c);
end
% quad funkcijai var noradit precizitati ar
% kuru ta rekinas sintaksi
tol = [1e-3 1e-4 1e-5 1e-6 1e-7];
for tolc = tol
    xvquad=1/(t(end)-t(1))*quad(@lab3_gabrans,t(1),t(end),tolc);

    fprintf('|tol=%0.7f\t|vv=%f\t||ef=%f\t|\n',tolc,xvquad,xef3c);
end



h = 0.01; %pie liel#ka so#a abas vid v#rt#bas b#s prec#z#kas
t = 0:h:5.5;
vid_t = (1/(length(t)-1)) * sum(lab3_gabrans(t(1:end-1))); %skaitlisk# katru reizi

ef_t = (1/(length(t)-1)) * sum(lab3_gabrans(t(1:end-1)));

plot(t,lab3_gabrans(t),t,vid*ones(size(t)),'r--')
grid on
```

```
patiesa efektiva vertiiba

ef =

    0.6739

|dt=0.1000 |vv=0.511788 ||ef=1.759629 |
|dt=0.0100 |vv=0.552179 ||ef=1.751685 |
|dt=0.0010 |vv=0.535302 ||ef=1.748828 |
|dt=0.0001 |vv=0.539096 ||ef=1.746404 |
|tol=0.0010000 |vv=0.548825 ||ef=1.746404 |
|tol=0.0001000 |vv=0.536896 ||ef=1.746404 |
Warning: Maximum function count exceeded; singularity likely.
|tol=0.0000100 |vv=0.280780 ||ef=1.746404 |
Warning: Maximum function count exceeded; singularity likely.
|tol=0.0000010 |vv=0.338384 ||ef=1.746404 |
Warning: Maximum function count exceeded; singularity likely.
|tol=0.0000001 |vv=0.503449 ||ef=1.746404 |
```



Secinajumi

Efektiva vertiba ir loti preciza. Patiesa efektiva vertiba tiek ieguta pakapeniski un ari ir preciza.

Published with MATLAB® R2013a