Отчёт №1

SPecialiST RePack | [Адрес организации]

Лабораторная работа по моделированию ИУС

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Задание №1   
Num1.m Содержание:

%Вариант 16

clc

clf

clear

close all

Eps = 0.01;

T1 = 0.2;

T2 = 0.1;

k = 1;

w = 0.0001:0.01:100;

A\_w = k./(sqrt((T1.\*w).^2+1));

figure(1)

semilogx(w,A\_w,'-r');

hold on; grid on;

xlabel('w');

ylabel('A(w)');

A\_w = k./(sqrt((T2.\*w).^2)+1);

semilogx(w,A\_w,'-blue');

legend('A(w) при Т1','A(w) при Т2');

title('A(w)');

% фи от омЕга

figure;

phi\_w = -atan(w.\*T1);

semilogx(w,phi\_w,'-r');

hold on; grid on;

phi\_w = -atan(w.\*T2);

semilogx(w,phi\_w,'-blue');

legend('phi(w) при Т1','phi(w) при Т2');

title('phi(w)');

grid on;

%U(w)

figure;

U\_w = k./((T1.\*w).^2+1);

semilogx(w,U\_w,'-r');

hold on; grid on;

U\_w = k./((T2.\*w).^2+1);

semilogx(w,U\_w,'-blue');

xlabel('w');

ylabel('U(w)');

legend('U(w) при Т1','T(w) при Т2');

title('T(w)');

%V(w)

figure;

V\_w = -k\*T1.\*w./((T1.\*w).^2+1);

semilogx(w,V\_w,'-r');

hold on; grid on;

V\_w = -k\*T1.\*w./((T2.\*w).^2+1);

semilogx(w,V\_w,'-blue');

legend('V(w) при Т1','V(w) при Т2');

title('V(w)');

%L(w)

figure;

L\_w = 20\*log(k)-20\*log10(sqrt((T1.\*w).^2+1));

semilogx(w,L\_w,'-r');

hold on; grid on;

L\_w = 20\*log(k)-20\*log10(sqrt((T2.\*w).^2+1));

semilogx(w,L\_w,'-blue');

legend('L(w) при Т1','L(w) при Т2');

title('L(w)');

w = 0:0.1:5;

y = zeros(1,51);

semilogx(w,y,'-cyan');

w = 5:0.1:100;

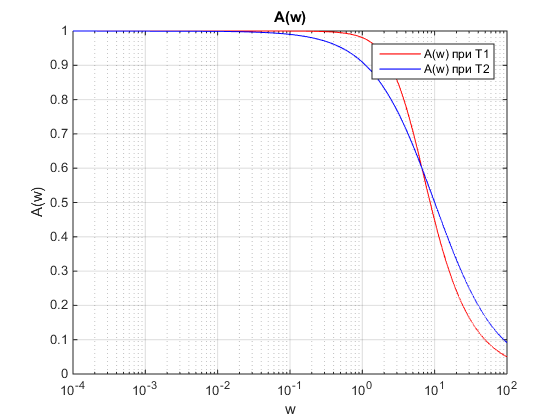
y = 20\*log10(k)-20\*log10(T1\*w);

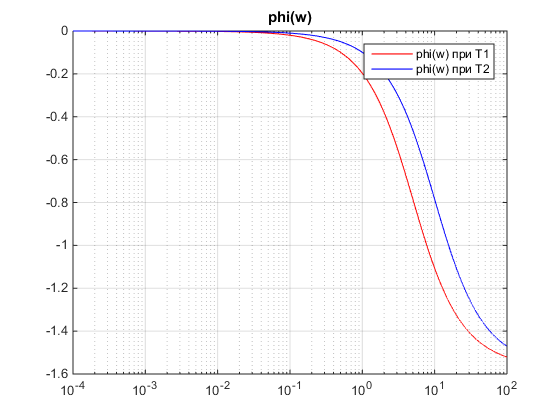
semilogx(w,y,'-cyan');

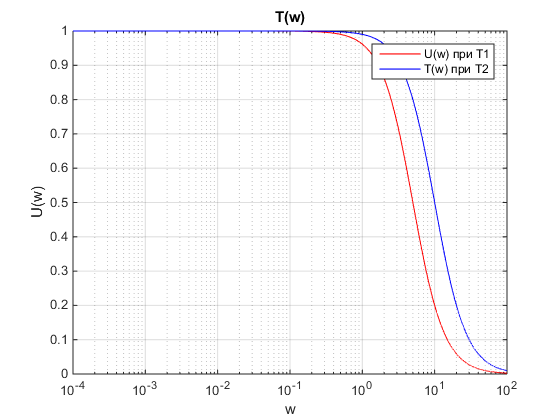
sys = tf(k,[T1 2]);

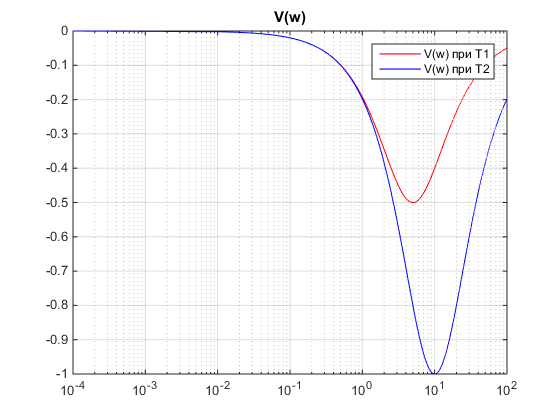
ltiview(sys)

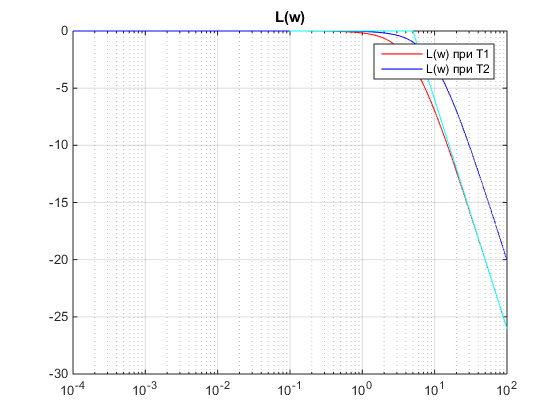
grid;

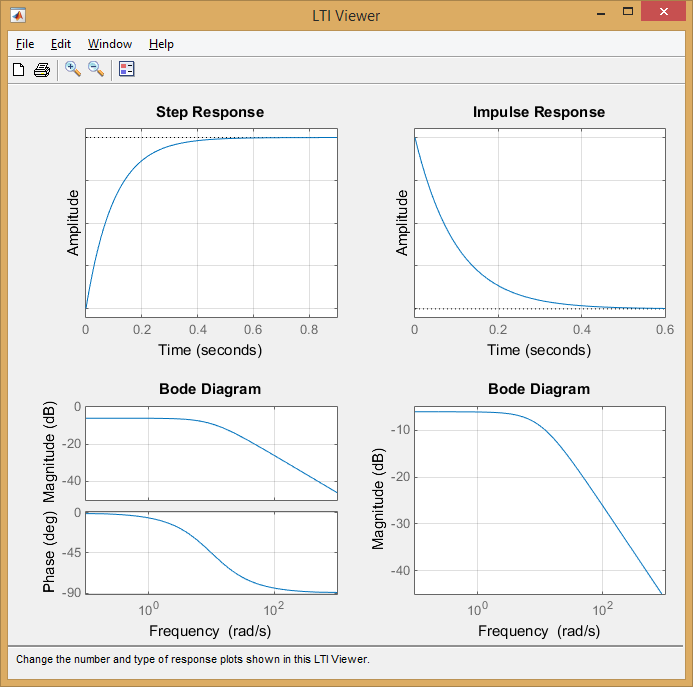












Задание №2  
Num2.m Содержание:

%%

%Вариант 16

clc

clf

clear

close all

epsil = 0.01;

pii = 3.14;

T1 = 0.2;

T2 = 0.1;

k = 1;

w = 0.01:0.01:100;

A = w.^2;

B = (T1^2);

C = 1 - A.\*B;

D = 2.\*epsil.\*T1.\*w;

E = D.^2;

F = C.^2;

A\_w = k./( sqrt( ((1-(T1.^2).\*(w.^2)).^2) + ((2\*epsil\*T1\*w).^2) ) );

figure

semilogx(w,A\_w,'-r');

hold on; grid on;

xlabel('w');

ylabel('A(w)');

A\_w = k./(sqrt((1-(T2).^2.\*(w).^2).^2+ (2.\*epsil.\*T2.\*w).^2));

semilogx(w,A\_w,'-blue');

legend('A(w) при Т1','A(w) при Т2');

title('A(w)');

% фи от омЕга

figure;

w1 = 0.01:0.01:9.99;

w2 = 10.01:0.01:100;

phi\_w = -acot((2.\*epsil.\*T1.\*w1)./(1-(T1.^2).\*(w1.^2)));

semilogx(w1,phi\_w,'-r');

hold on; grid on;

phi\_w = -acot((2.\*epsil.\*T1.\*w2)./(1-(T1.^2).\*(w2.^2)));

semilogx(w2,phi\_w,'-r');

w1 = 0.01:0.01:19.99;

w2 = 20.01:0.01:100;

phi\_w = -acot((2.\*epsil.\*T2.\*w1)./(1-(T2.^2).\*(w1.^2)));

semilogx(w1,phi\_w,'-blue');

phi\_w = -acot((2.\*epsil.\*T2.\*w2)./(1-(T2.^2).\*(w2.^2)));

semilogx(w2,phi\_w,'-blue');

legend('phi(w) при Т1','','phi(w) при Т2','');

title('phi(w)');

xlabel('w');

ylabel('phi(w)');

grid on;

%U(w)

figure;

U\_w = (k.\*(1-(T1).^2.\*(w).^2))./((1-(T1).^2.\*(w).^2).^2+ (2.\*epsil.\*T1.\*w).^2);

semilogx(w,U\_w,'-r');

hold on; grid on;

U\_w = (k.\*(1-(T2).^2.\*(w).^2))./((1-(T2).^2.\*(w).^2).^2+ (2.\*epsil.\*T2.\*w).^2);

semilogx(w,U\_w,'-blue');

xlabel('w');

ylabel('U(w)');

legend('U(w) при Т1','T(w) при Т2');

title('T(w)');

%V(w)

figure;

V\_w = -2\*k\*epsil\*T1.\*w./((1-(T1).^2.\*(w).^2).^2+ (2.\*epsil.\*T1.\*w).^2);

semilogx(w,V\_w,'-r');

hold on; grid on;

V\_w = -2\*k\*epsil\*T2.\*w./((1-(T2).^2.\*(w).^2).^2+ (2.\*epsil.\*T2.\*w).^2);

semilogx(w,V\_w,'-blue');

legend('V(w) при Т1','V(w) при Т2');

title('V(w)');

xlabel('w');

ylabel('V(w)');

%L(w)

figure;

L\_w = 20\*log10(k)- 20\*log10((1-(T1).^2.\*(w).^2).^2+ (2.\*epsil.\*T1.\*w).^2);

semilogx(w,L\_w,'-r');

hold on; grid on;

L\_w = 20\*log10(k)- 20\*log10((1-(T2).^2.\*(w).^2).^2+ (2.\*epsil.\*T2.\*w).^2);

semilogx(w,L\_w,'-blue');

legend('L(w) при Т1','L(w) при Т2');

xlabel('w');

ylabel('L(w)');

title('L(w)');

w = 0:0.1:5;

y = zeros(1,51);

semilogx(w,y,'-cyan');

w = 5:0.1:100;

y = 20\*log10(k)-80\*log10(T1\*w);

semilogx(w,y,'-cyan');

sys = tf(k,[T1 2]);

ltiview(sys)

grid;

