clear();

clc();

s = %s;

K = 1;

t = 0:0.01:20;

A = 1;

zeta = 0.25;

Omeg = 0.1;

P = syslin('c',K\*Omeg\*Omeg/(s\*s+2\*zeta\*Omeg\*s+Omeg\*Omeg))

u = A\*sin(Omeg\*t);

y = csim(u,t,P);

yss = A/(1+Omeg\*Omeg)\*(sin(Omeg\*t)-Omeg\*cos(Omeg\*t));

scf(0);

plot2d(t,u,style=color(125,125,125));

plot2d(t,y,style=3);

plot2d(t,yss,style=2);

xtitle("Frequency Response","time[s]","u,y,yss");

xgrid();

Omeg = 0.5;

P = syslin('c',K\*Omeg\*Omeg/(s\*s+2\*zeta\*Omeg\*s+Omeg\*Omeg))

u = A\*sin(Omeg\*t);

y = csim(u,t,P);

yss = A/(1+Omeg\*Omeg)\*(sin(Omeg\*t)-Omeg\*cos(Omeg\*t));

scf(1);

plot2d(t,u,style=color(125,125,125));

plot2d(t,y,style=3);

plot2d(t,yss,style=2);

xtitle("Frequency Response","time[s]","u,y,yss");

xgrid();

Omeg = 1.0;

P = syslin('c',K\*Omeg\*Omeg/(s\*s+2\*zeta\*Omeg\*s+Omeg\*Omeg))

u = A\*sin(Omeg\*t);

y = csim(u,t,P);

yss = A/(1+Omeg\*Omeg)\*(sin(Omeg\*t)-Omeg\*cos(Omeg\*t));

scf(2);

plot2d(t,u,style=color(125,125,125));

plot2d(t,y,style=3);

plot2d(t,yss,style=2);

xtitle("Frequency Response","time[s]","u,y,yss");

xgrid();

zeta = 0.5;

Omeg = 0.1;

P = syslin('c',K\*Omeg\*Omeg/(s\*s+2\*zeta\*Omeg\*s+Omeg\*Omeg))

u = A\*sin(Omeg\*t);

y = csim(u,t,P);

yss = A/(1+Omeg\*Omeg)\*(sin(Omeg\*t)-Omeg\*cos(Omeg\*t));

scf(3);

plot2d(t,u,style=color(125,125,125));

plot2d(t,y,style=3);

plot2d(t,yss,style=2);

xtitle("Frequency Response","time[s]","u,y,yss");

xgrid();

Omeg = 0.5;

P = syslin('c',K\*Omeg\*Omeg/(s\*s+2\*zeta\*Omeg\*s+Omeg\*Omeg))

u = A\*sin(Omeg\*t);

y = csim(u,t,P);

yss = A/(1+Omeg\*Omeg)\*(sin(Omeg\*t)-Omeg\*cos(Omeg\*t));

scf(4);

plot2d(t,u,style=color(125,125,125));

plot2d(t,y,style=3);

plot2d(t,yss,style=2);

xtitle("Frequency Response","time[s]","u,y,yss");

xgrid();

Omeg = 1.0;

P = syslin('c',K\*Omeg\*Omeg/(s\*s+2\*zeta\*Omeg\*s+Omeg\*Omeg))

u = A\*sin(Omeg\*t);

y = csim(u,t,P);

yss = A/(1+Omeg\*Omeg)\*(sin(Omeg\*t)-Omeg\*cos(Omeg\*t));

scf(5);

plot2d(t,u,style=color(125,125,125));

plot2d(t,y,style=3);

plot2d(t,yss,style=2);

xtitle("Frequency Response","time[s]","u,y,yss");

xgrid();

zeta = 1;

Omeg = 0.1;

P = syslin('c',K\*Omeg\*Omeg/(s\*s+2\*zeta\*Omeg\*s+Omeg\*Omeg))

u = A\*sin(Omeg\*t);

y = csim(u,t,P);

yss = A/(1+Omeg\*Omeg)\*(sin(Omeg\*t)-Omeg\*cos(Omeg\*t));

scf(6);

plot2d(t,u,style=color(125,125,125));

plot2d(t,y,style=3);

plot2d(t,yss,style=2);

xtitle("Frequency Response","time[s]","u,y,yss");

xgrid();

Omeg = 0.5;

P = syslin('c',K\*Omeg\*Omeg/(s\*s+2\*zeta\*Omeg\*s+Omeg\*Omeg))

u = A\*sin(Omeg\*t);

y = csim(u,t,P);

yss = A/(1+Omeg\*Omeg)\*(sin(Omeg\*t)-Omeg\*cos(Omeg\*t));

scf(7);

plot2d(t,u,style=color(125,125,125));

plot2d(t,y,style=3);

plot2d(t,yss,style=2);

xtitle("Frequency Response","time[s]","u,y,yss");

xgrid();

Omeg = 1.0;

P = syslin('c',K\*Omeg\*Omeg/(s\*s+2\*zeta\*Omeg\*s+Omeg\*Omeg))

u = A\*sin(Omeg\*t);

y = csim(u,t,P);

yss = A/(1+Omeg\*Omeg)\*(sin(Omeg\*t)-Omeg\*cos(Omeg\*t));

scf(8);

plot2d(t,u,style=color(125,125,125));

plot2d(t,y,style=3);

plot2d(t,yss,style=2);

xtitle("Frequency Response","time[s]","u,y,yss");

xgrid();

xs2png(0, '1.png');

xs2png(1, '2.png');

xs2png(2, '3.png');

xs2png(3, '4.png');

xs2png(4, '5.png');

xs2png(5, '6.png');

xs2png(6, '7.png');

xs2png(7, '8.png');

xs2png(8, '9.png');

Chart, line chart

Description automatically generated

Figure 1 zeta=0.25 Omeg=0.1

Chart, line chart

Description automatically generated

Figure 2 zeta=0.25 Omeg=0.5

Chart, line chart

Description automatically generated

Figure 3 zeta=0.25 Omeg=1.0

Chart, line chart

Description automatically generated

Figure 4 zeta=0.5 Omeg=0.1

Chart, line chart

Description automatically generated

Figure 5 zeta=0.5 Omeg=0.5

Chart, line chart

Description automatically generated

Figure 6 zeta=0.5 Omeg=1.0

Chart, line chart

Description automatically generated

Figure 7 zeta=1.0 Omeg=0.1

Chart, line chart

Description automatically generated

Figure 8 zeta=1.0 Omeg=0.5

Chart, line chart

Description automatically generated

Figure 9 zeta=1.0 Omeg=1.0