TALLER CONTROL 2 PRIMER CORTE

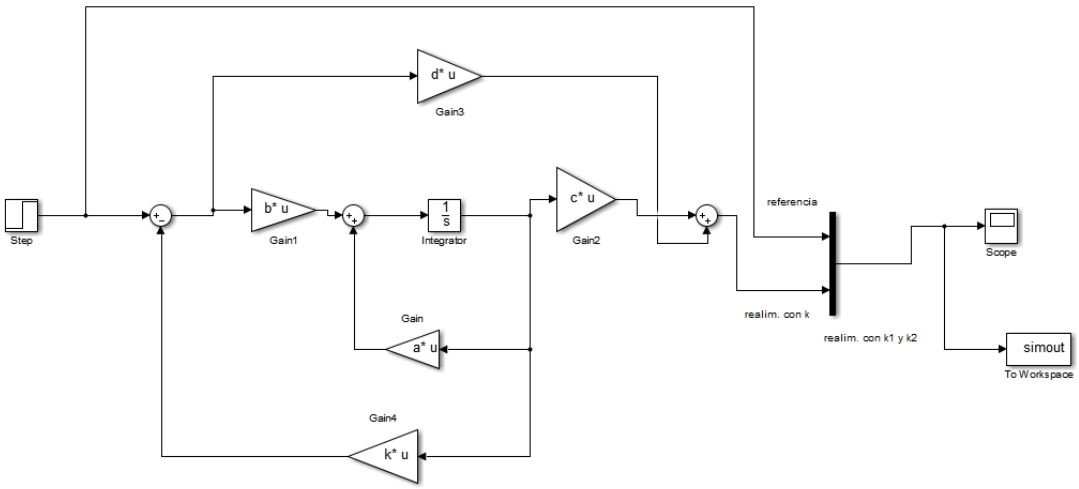
JOSE ROLDAN

1)

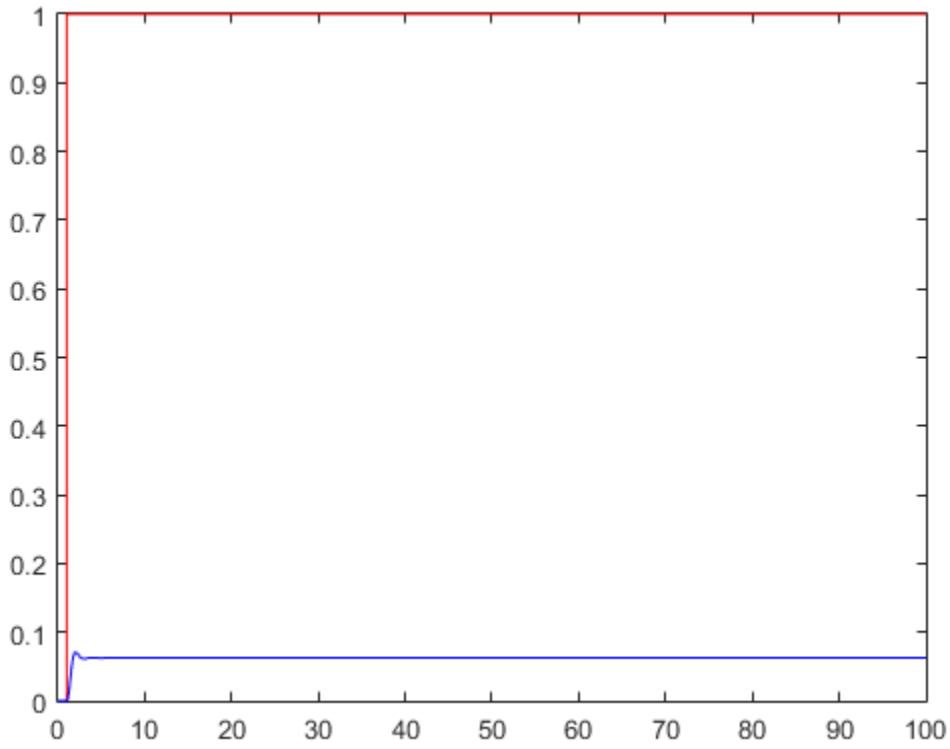
Codigo:

```
s=tf('s');
a=[-6 -11 -6;1 0 0;0 1 0];
b=[1;0;0];
c=[0 0 10];
d=0;
G=(s^3+14*s^2+56*s+160);%desempeño deseado
p=[-2+2*sqrt(3)*i,-2-2*sqrt(3)*i,-10];
k=place(a,b,p);%cte de realim state
plot(simout.time(:,1),simout.Data(:,1),'r')
hold on
plot(simout.time(:,1),simout.Data(:,2),'b')
```

Modelo en simulink:



Testing:

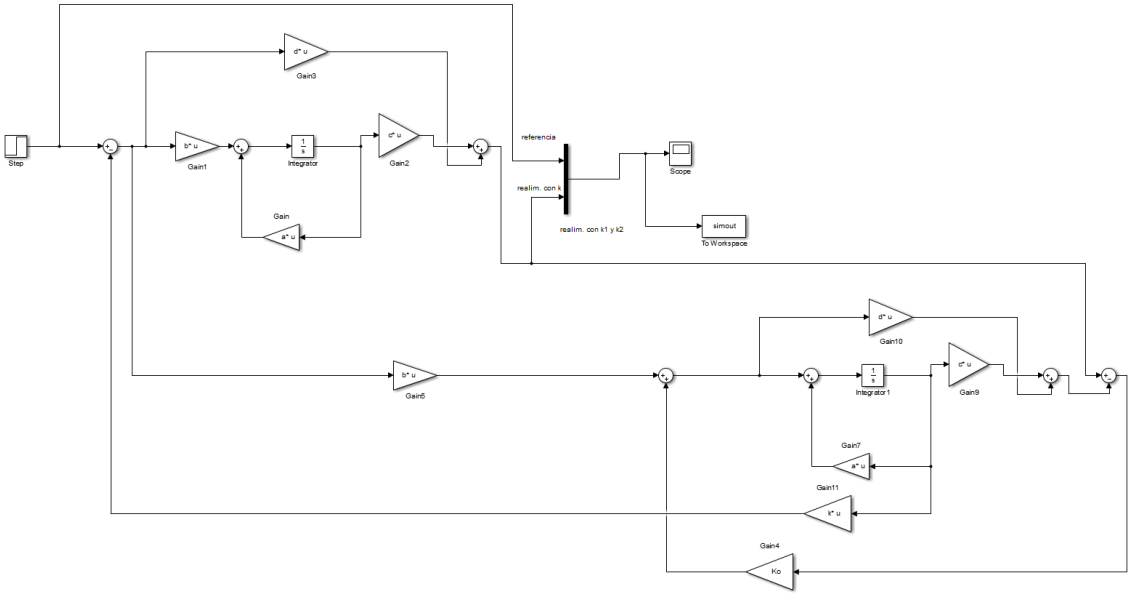


2)

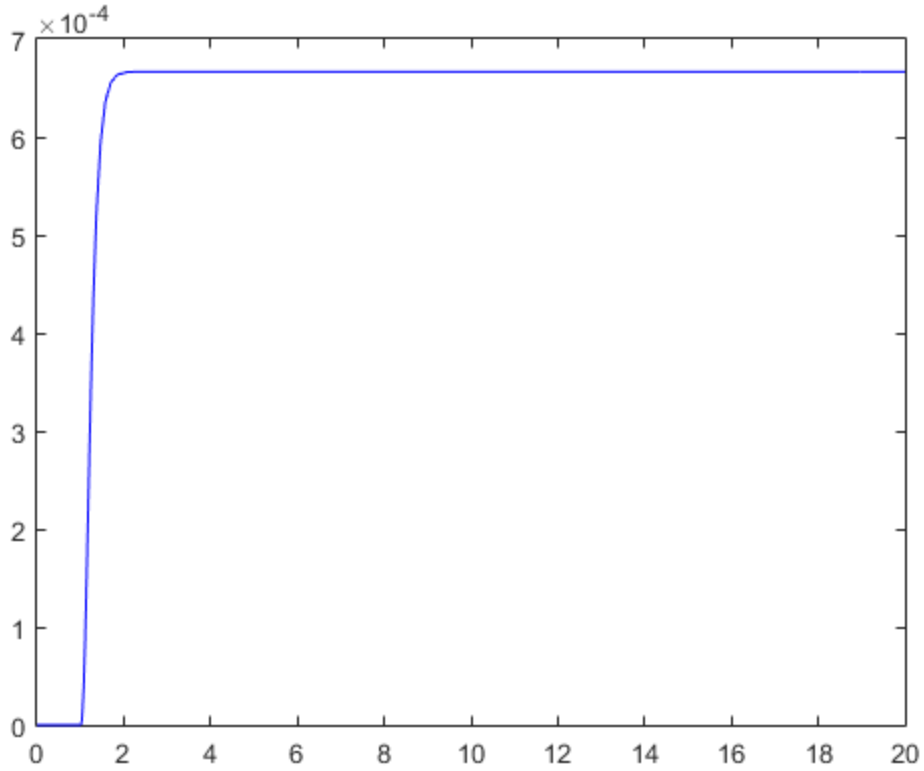
Codigo:

```
s=tf('s');
a=[0 1 0;0 0 1;-5 -6 0];
b=[0;0;1];
c=[1 0 0];
d=0;
G=(s^3+35*s^2+400*s+1500);%desempeño deseado
p=[-10,-10,-15];
k=acker(a,b,p);
Ko=acker(a',c',p)';%cte obsv comp
plot(simout1.time(:,1),simout1.Data(:,2),'b')
```

Modelo en simulink:



Testing:

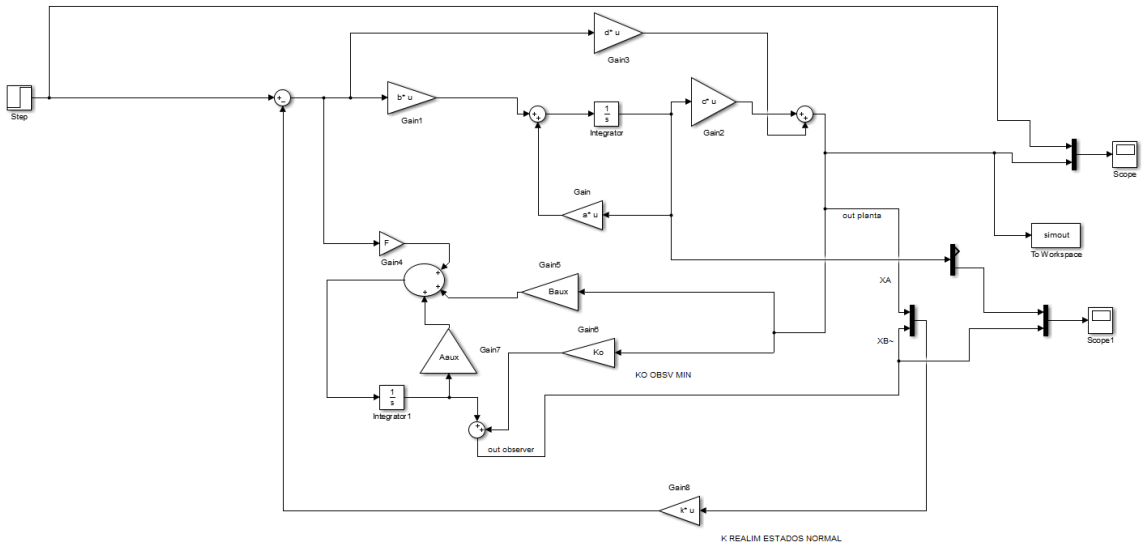


3)

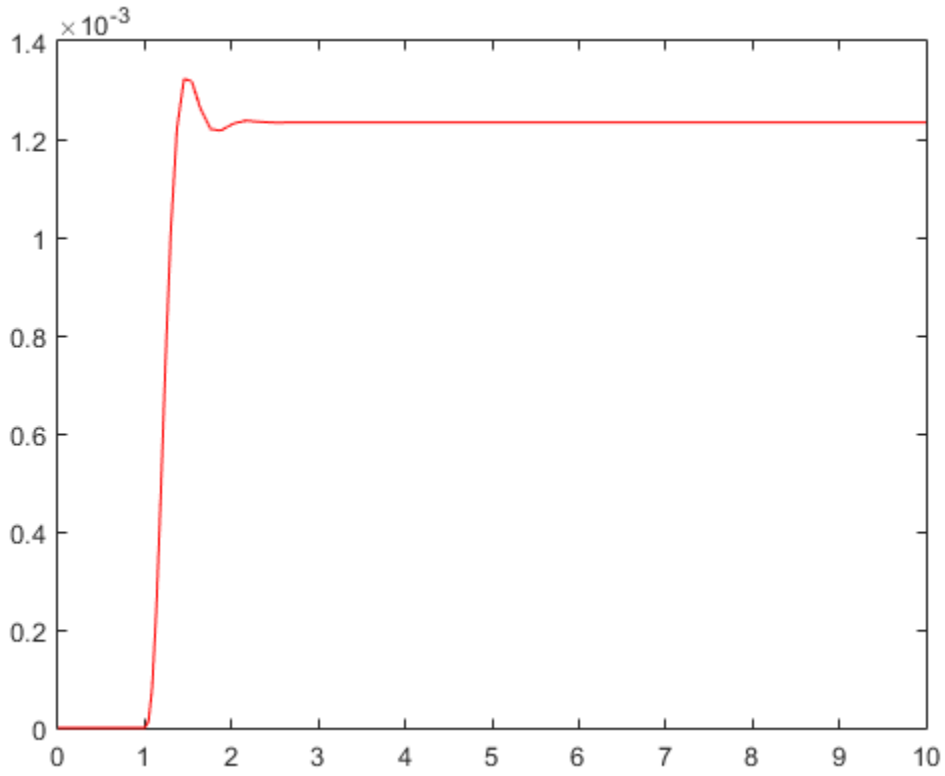
Codigo:

```
s=tf('s');
a=[0 1 0;0 0 1;-1.244 -0.3956 -3.145];
b=[0;0;1.244];
c=[1 0 0];
d=0;
G=(s^2+10*s+100);%desempeño deseado
%orden minimo
Aaa=0;
Aab=[1 0];
Aba=[0;1.244];
Abb=[0 1;0.3956  -3.145];
Ba=0;
Bb=[0;1.244];
p=[-5+5*sqrt(3)*i,-5-5*sqrt(3)*i];
p1=[-5+5*sqrt(3)*i,-5-5*sqrt(3)*i,-10];
Ko=place(Abb',Aab',p)'%cte obs minim
k=place(a,b,p1);%cte realim state
Aaux=Abb-Ko*Aab;
Baux=Aaux*Ko+Aba+Ko*Aaa;
F=Bb-(Ko*Ba);
p=1;
q=1;
n=3;
plot(simout2.time(:,1),simout2.Data(:,1),'r')
```

Modelo en simulink:



Testing:



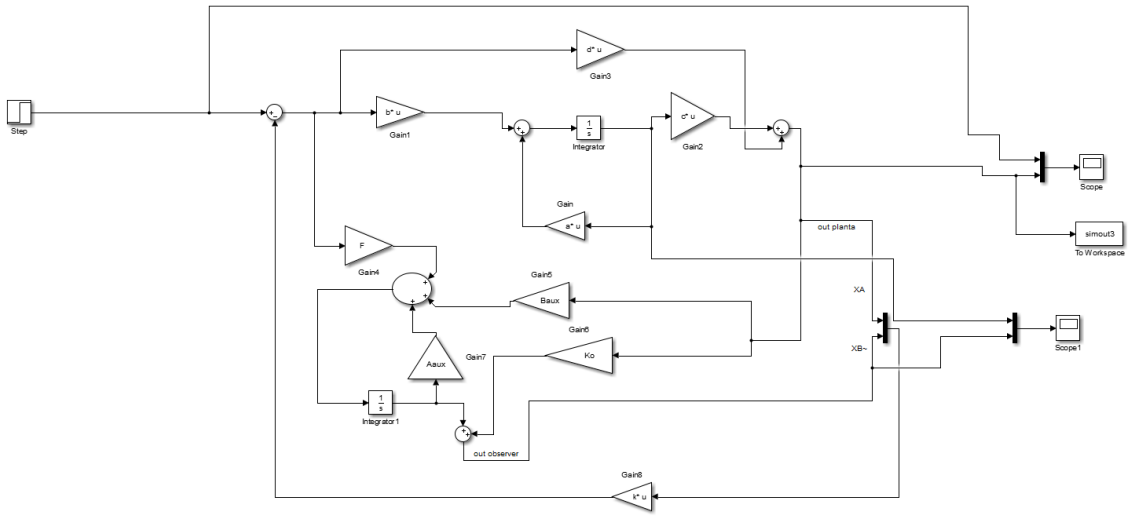
4)

Codigo:

```
s=tf('s');
a=[0 1;0 0];
b=[0;1];
c=[1 0];
d=0;
G=(s^2+sqrt(2)*s+1);%desempeño deseado realim state
G1=(s+5);%desempeño deseado obsv minim
prealim=[-0.7071+0.7071*i,-0.7071-0.7071*i];
pobsv=-5;
Aaa=0;
Aab=1;
Aba=0;
Abb=0;
Ba=0;
Bb=1;
k=place(a,b,prealim);%cte de realim state
Ko=place(Abb',Aab',pobsv)'%cte obs minim
k1=1;
```

```
k2=sqrt(2);
p=1;
q=1;
n=3;
%orden minimo
Aaux=Abb-Ko*Aab;
Baux=Aaux*Ko+Aba+Ko*Aaa;
F=Bb-(Ko*Ba);
plot(simout3.time(:,1),simout3.Data(:,1),'r')
```

Modelo en simulink:



Testing: