TALLER CONTROL 2 SEGUNDO CORTE

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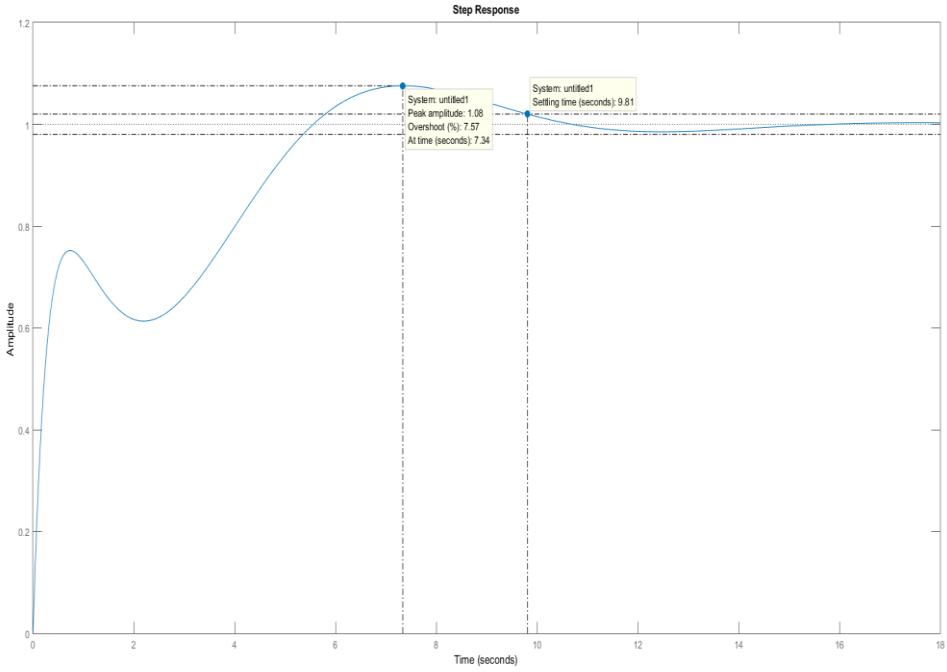
Código:

```
p=[1 0.6348 0.4761];
roots(p)
s=tf('s');
pid=0.049+(0.151/s)+0.331*s;
G=10/(s^2+0.5*s+2);
step(G)
step(feedback(pid*G,1))

z=tf('z',0.0844);
Ts=0.0844;
Gz=c2d(G,Ts);

%punto 3
%forward
plot(simout.time(:,1),simout.Data(:,1),'r')
hold on
plot(simout.time(:,1),simout.Data(:,2),'b')
%backward
plot(simout1.time(:,1),simout1.Data(:,1),'r')
hold on
plot(simout1.time(:,1),simout1.Data(:,2),'b')
%tustin
plot(simout2.time(:,1),simout2.Data(:,1),'r')
hold on
plot(simout2.time(:,1),simout2.Data(:,2),'b')

%punto 6
%polos forward
numfor=[3.31 -6.13 4.82];
denfor=[1 0.81 -2.13 1.83];
pzmap(numfor,denfor)
figure(1)
zplane(numfor,denfor)
%polos backward
numbac=[5.31 -6.62 2.82 0];
denbac=[8.81 -13.11 6.81 -1];
pzmap(numbac,denbac)
figure(1)
zplane(numbac,denbac)
%polos tustin
numtus=[15.73 -7.73 -9.69 13.77];
dentus=[29.73 -29.73 8.31 3.77];
pzmap(numtus,dentus)
figure(1)
zplane(numtus,dentus)

%punto 7
%forward
Gt=(3.31*s^2 + 0.49*s +1.51)/(s^3 + 3.81*s^2 + 2.49*s +1.51);
Gzfor=(3.31*z^2 -6.62*z + 4.82)/(z^3 + 0.81*z^2 - 2.13*z + 1.83);
```

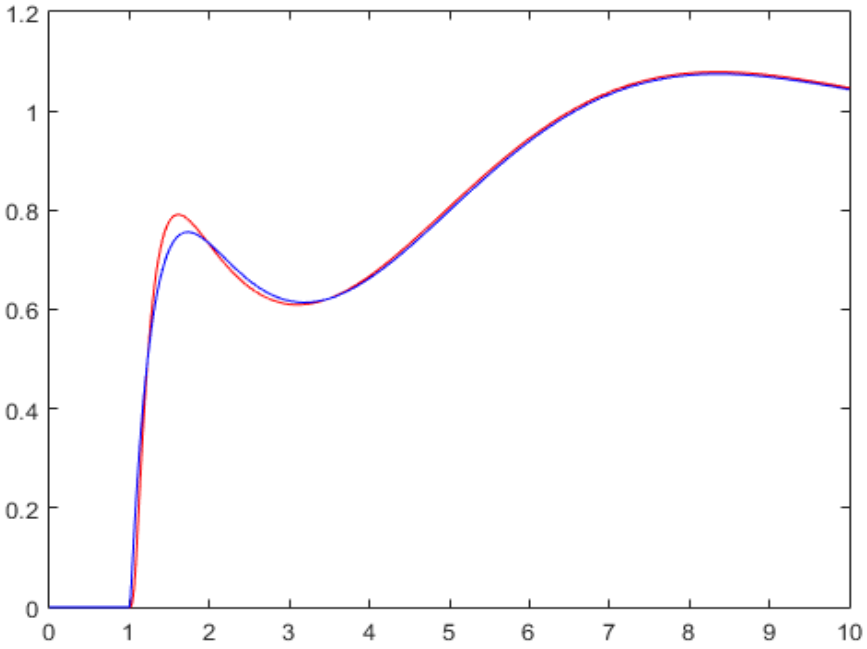
```
step(Gt)
hold on
step(Gzfor)
%backward
Gzbac=(5.31*z^3 - 6.62*z^2 + 2.82*z)/(8.81*z^3 - 13.11*z^2 + 6.81*z - 1);
step(Gt)
hold on
step(Gzbac)
%tustin
Gztus=(15.73*z^3 - 7.73*z^2 - 9.69*z + 13.77)/(29.73*z^3 - 29.73*z^2 +
8.31*z + 3.77);
step(Gt)
hold on
step(Gztus)
```

Al probar los resultados con el pid, se obtiene que cumple con los parámetros que pide el ejercicio

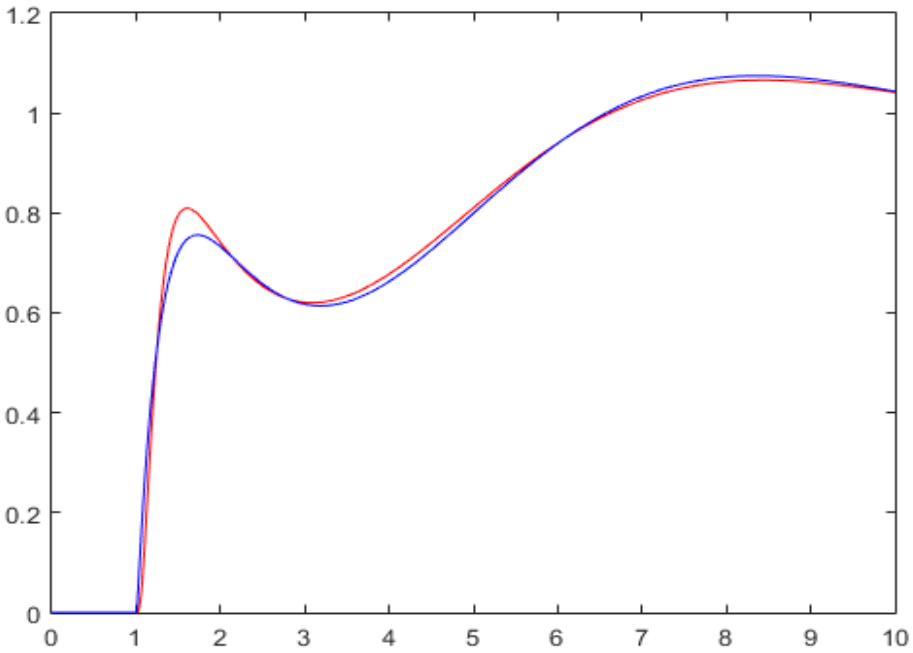


3)

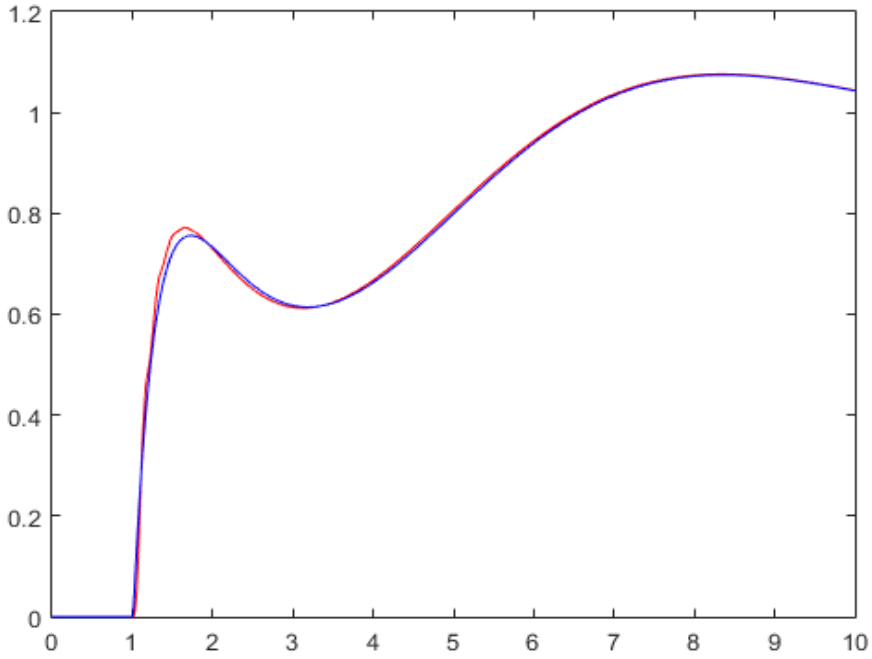
En forward



En backward

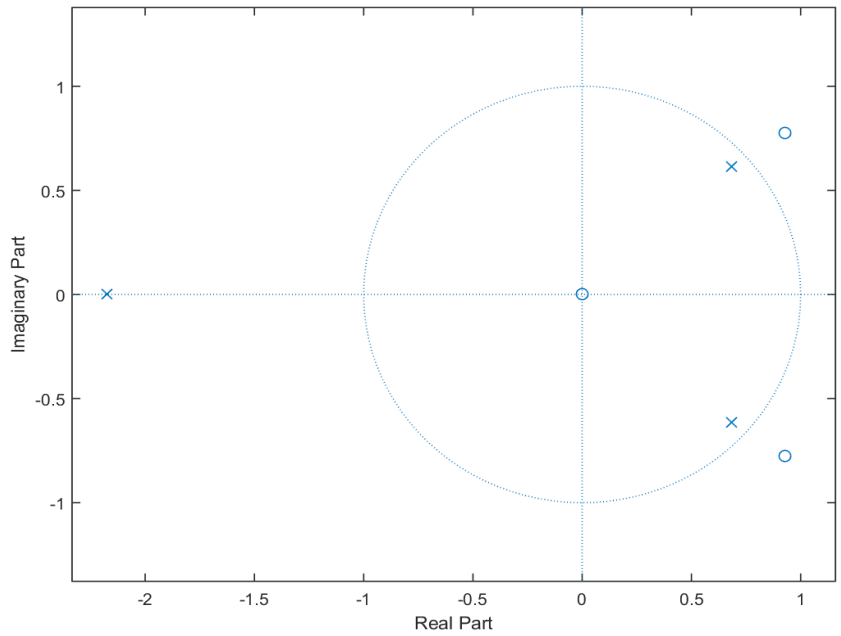


En tustin

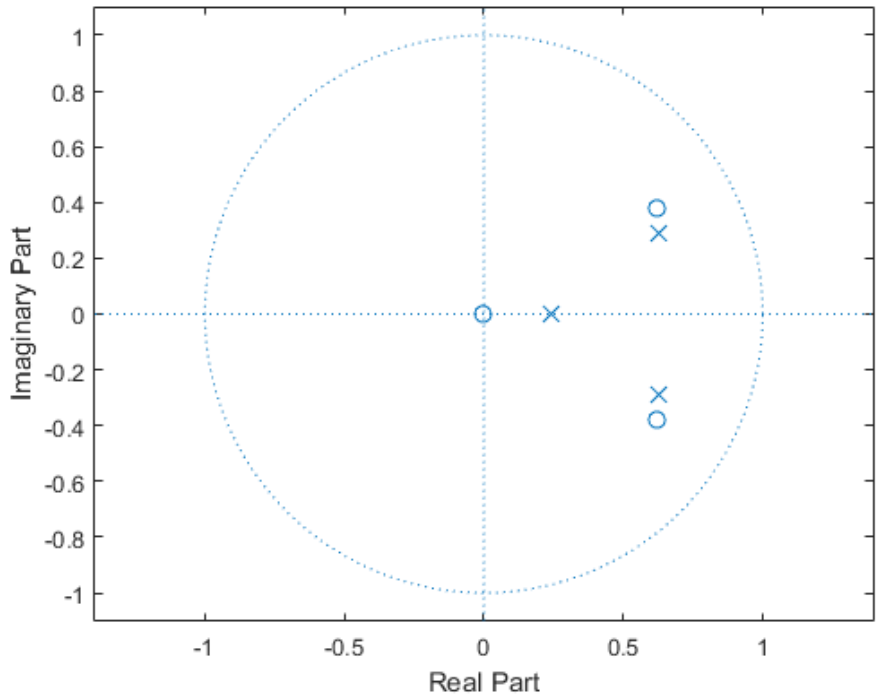


6)

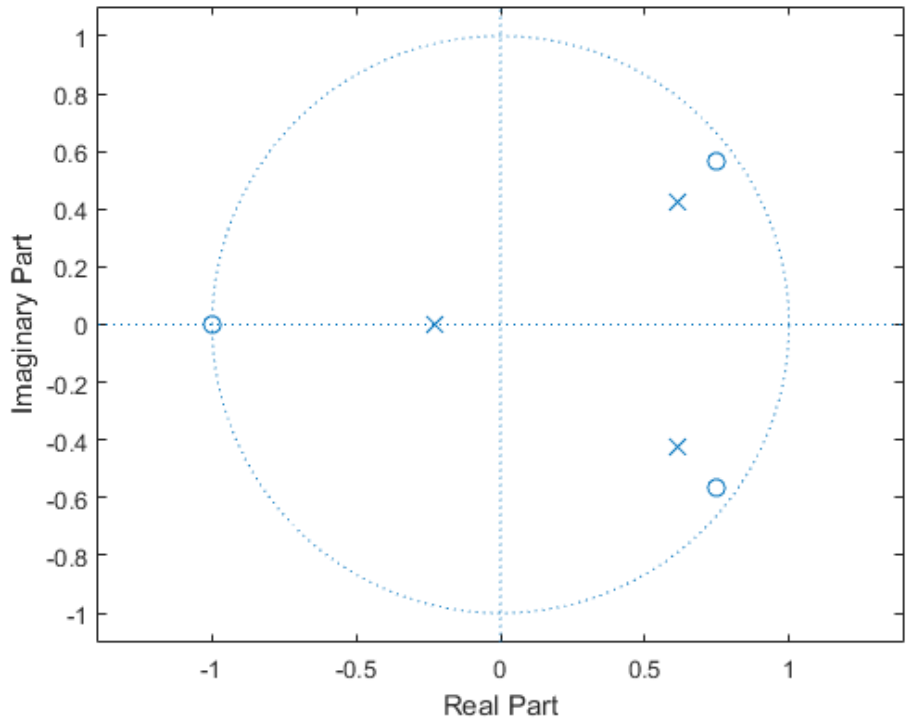
Polos forward



Polos backward

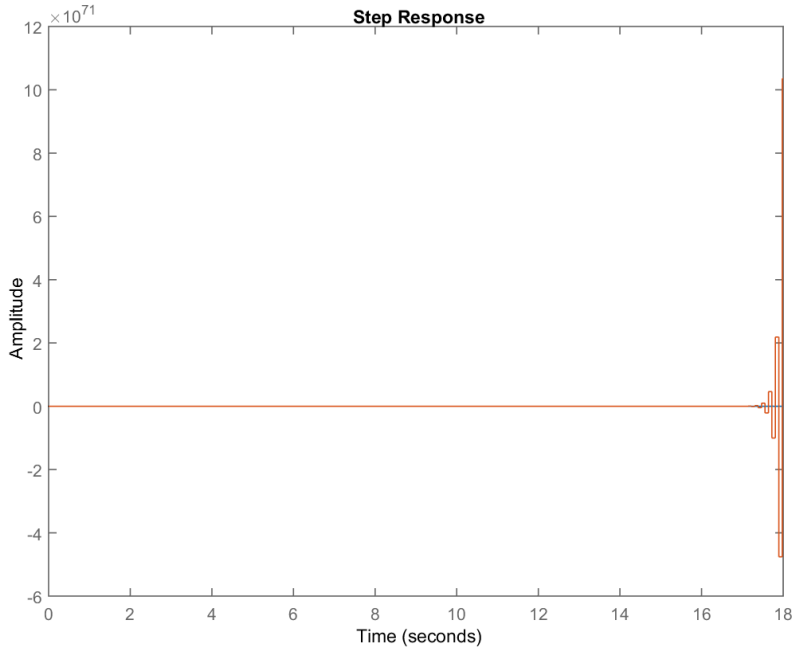


Polos tustin

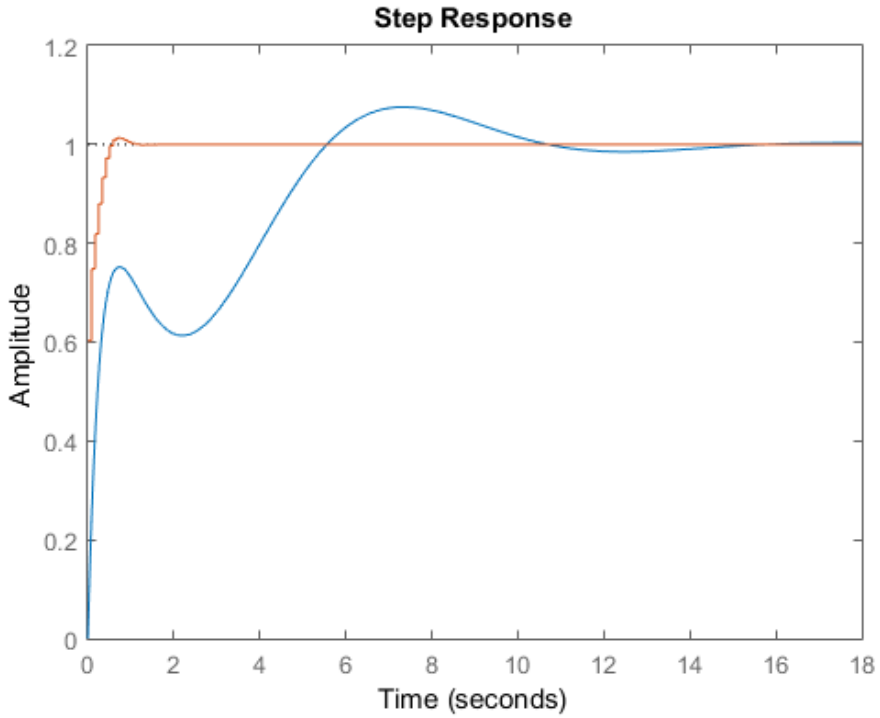


7)

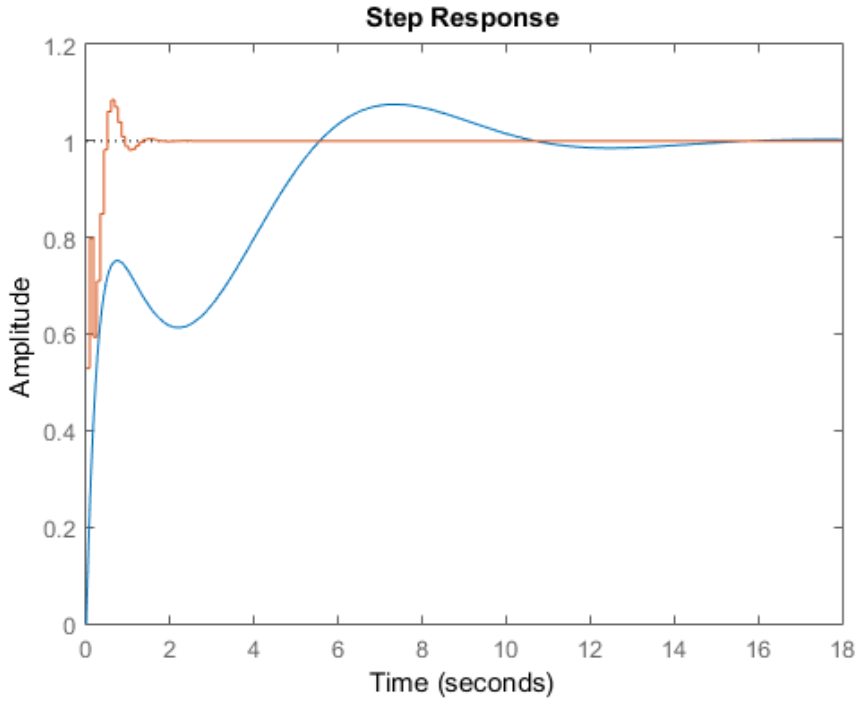
Comparación forward



Comparación backward



Comparación tustin



Modelo en simulink