Table of Contents


```
clc
clear
close

run('BASIC.m')
```

```
sys_discret =

  0.0076672 (z-0.7239) (z-0.8621)
  -------------------------------
  (z-1.109) (z-0.6048) (z-0.5835)

Sample time: 0.094282 seconds
Discrete-time zero/pole/gain model.
```

```
Titlework='Q11'
```

```
Titlework =
'Q11'
```

Desigered System

```
%run('am.mlx');
%A_m=den_discret_desierd%A=den_discret
A_m=poly([0.80 0.65 0.69]);


betaa=sum(A_m)/sum(B);
B_m=B*betaa;
B_plus=1;
```

MDPP with no zero canselation

```
A_o=[1 0 0];
A_c=conv(A_m,A_o)
```

```
A_c = 1×6
    1.0000   -2.1400    1.5205   -0.3588         0         0
```

```
[R_prim , S] = Diophantine(A , B , A_c)
```

```
R_prim = 1×3
    1.0000   -2.3862    1.2188
S = 1×3
  331.7730 -367.4603   99.7126
```

```
T=conv(betaa,A_o)
```

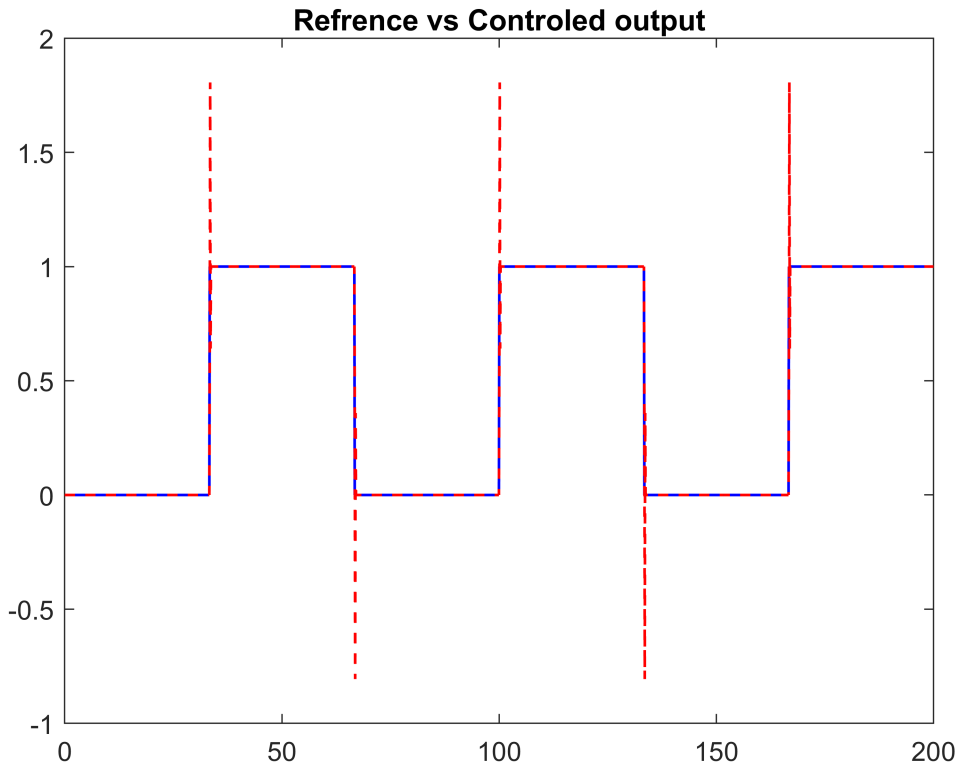
```
T = 1×3
   74.3410         0         0
```

```
R=conv(R_prim,B_plus)
```

```
R = 1×3
    1.0000   -2.3862    1.2188
```

```
tfinal=200;

t = 0:T_s:tfinal;
uc=gensig('square' , tfinal/3 , tfinal ,T_s);

u=zeros(numel(t),1);
y=zeros(numel(t),1);

for i=10:numel(t)
    var1=conv(B,T)  ;       narv1=numel(var1)      ;
    var2=A_c(2:end) ;       narv2=numel(A_c(2:end));
    var3=conv(A,T)  ;       narv3=numel(var3)      ;

    y(i)=var1*uc(i:-1:i-narv1+1)-var2*uc(i-1:-1:i-narv2);
    u(i)=var3*uc(i:-1:i-narv3+1)-var2*uc(i-1:-1:i-narv2);
end
```

```
plot(t,uc,'b',t,y,'r--','LineWidth',1)
title('Refrence vs Controled output')
print(gcf,[Titlework ' Refrence vs Controled output.png'],'-dpng','-r400');
```



```
plot(t,u)
title('Control Signal')
print(gcf,[Titlework ' Control Signal.png'],'-dpng','-r400');
```