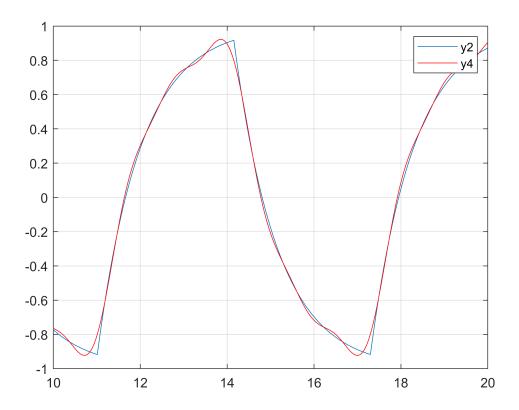
```
t=linspace(0,20,1000);
A=[1,1];%因为 H(s)=1/(1+RCs),RC=1.
B=1;%所以根据公式能知晓 A=[1,1],B=1;
apos k=zeros(1,5);
aneg k=zeros(1,5);
s=zeros(5,1000);
for k=(1:5)
   apos_k(k)=(1-cos(pi*k))*sin(pi*k/2)/(pi*k);
   aneg_k(k)=(1-\cos(pi*(-k)))*\sin(pi*(-k)/2)/(pi*(-k));
   s(k,:)=apos_k(k)*exp(1i*k*t)+aneg_k(k)*exp(1i*(-k)*t);
   y(k,:)=lsim(B,A,s(k,:),t)
end
y = 5 \times 1000
    0.0000
              0.0252
                        0.0500
                                 0.0742
                                            0.0979
                                                      0.1211
                                                                0.1438
                                                                          0.1659 ...
                             0
                                       0
                                                 0
        0
                   0
                       -0.0166
    0.0000
             -0.0084
                                 -0.0246
                                           -0.0323
                                                     -0.0398
                                                               -0.0470
                                                                         -0.0538
        0
                   0
                             0
                                       0
                                                 0
                                                           0
                                                                    0
    0.0000
              0.0050
                                            0.0191
                        0.0099
                                  0.0146
                                                      0.0232
                                                                0.0270
                                                                          0.0305
y = 5 \times 1000
              0.0252
                       0.0500
                                 0.0742
                                           0.0979
                                                               0.1438
                                                                          0.1659 ...
                                                      0.1211
    0.0000
    0.0000
             -0.0084
                       -0.0166
                                 -0.0246
                                           -0.0323
                                                     -0.0398
                                                               -0.0470
                                                                         -0.0538
        0
                                       0
                                                           0
                                                                    0
    0.0000
             0.0050
                       0.0099
                                 0.0146
                                           0.0191
                                                      0.0232
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                                                                         0.0305
y = 5 \times 1000
                       0.0500
                                 0.0742
                                           0.0979
                                                               0.1438
                                                                         0.1659 ...
    0.0000
             0.0252
                                                     0.1211
    0.0000
                                           -0.0323
             -0.0084
                       -0.0166
                                 -0.0246
                                                     -0.0398
                                                               -0.0470
                                                                         -0.0538
                                      0
                                                           0
                                                                    0
    0.0000
             0.0050
                       0.0099
                                 0.0146
                                           0.0191
                                                      0.0232
                                                                0.0270
                                                                         0.0305
y = 5 \times 1000
                       0.0500
                                 0.0742
                                           0.0979
                                                               0.1438
                                                                         0.1659 · · ·
    0.0000
             0.0252
                                                      0.1211
    0.0000
                                                               -0.0470
             -0.0084
                       -0.0166
                                 -0.0246
                                           -0.0323
                                                     -0.0398
                                                                         -0.0538
                            0
                                      0
                                                 0
                                                           0
                                                                    0
    0.0000
             0.0050
                       0.0099
                                 0.0146
                                           0.0191
                                                      0.0232
                                                               0.0270
                                                                         0.0305
y = 5 \times 1000
             0.0252
                       0.0500
                                 0.0742
                                           0.0979
                                                     0.1211
                                                               0.1438
                                                                         0.1659 ...
    0.0000
                             a
                                       a
                                                 a
                                                           0
                                                                    a
                                                                              0
                       -0.0166
                                           -0.0323
    0.0000
             -0.0084
                                 -0.0246
                                                     -0.0398
                                                               -0.0470
                                                                         -0.0538
        0
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                                      0
                                                 0
                                                           0
                                                                    0
                                                                              0
    0.0000
             0.0050
                                            0.0191
                       0.0099
                                 0.0146
                                                      0.0232
                                                                0.0270
                                                                          0.0305
y4=1sim(B,A,sum(s),t);
t=linspace(0,20,1000);
x2=cos(t);
x2(x2>0) = ones(size(x2(x2>0)));
x2(x2<0)=-ones(size(x2(x2<0)));
y2=1sim(B,A,x2,t)';
plot(t(501:1000),y2(501:1000));grid on;hold on
plot(t(501:1000),y4(501:1000),'r');legend('y2','y4');
```



%因为 x2 的绝对值的平方在一个周期内对时间的积分小于无穷大%所以 x2 的傅里叶级数是收敛的,故 the two responses are so similar.