```
clc;
close ;
clear ;
fs = 10000;
fc = 1000;
omegap = 2*fs.*tan(2*pi*fc/(2*fs));
n1=2;
n2=6;
[z1,p1,k1]=buttap(n1);
[num1,den1]=zp2tf(z1,p1,k1);
[B1,A1]=lp2lp(num1,den1,omegap);
[bz1,az1]=bilinear(B1,A1,fs);
[h1,f1]=freqz(bz1,az1,2048,fs);

[z2,p2,k2]=buttap(n2);
[num2,den2]=zp2tf(z2,p2,k2);
[B2,A2]=lp2lp(num2,den2,omegap);
[bz2,az2]=bilinear(B2,A2,fs);
[h2,f2]=freqz(bz2,az2,2048,fs);

figure,
plot(f1,mag2db(abs(h1)),'r')
hold on
plot(f2,mag2db(abs(h2)))
axis([0 fs/2 -50 5])
grid
xlabel('Frequency (Hz)')
ylabel('Attenuation (dB)')
legend('butterworth of n=2','butterworth of n=6');

figure,
plot(f1,angle(h1),'r')
hold on
plot(f2,angle(h2))
axis([0 fs/2 -10 10])
grid
xlabel('Frequency (Hz)')
ylabel('Phase angle')
legend('butterworth of n=2','butterworth of n=6');
```

```
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate. RCOND =  2.437008e-37.
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inaccurate. RCOND =  2.437008e-37.
Warning: Matrix is close to singular or badly scaled. Results may be
inaccurate. RCOND =  2.434112e-37.
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inaccurate. RCOND =  2.434112e-37.
```

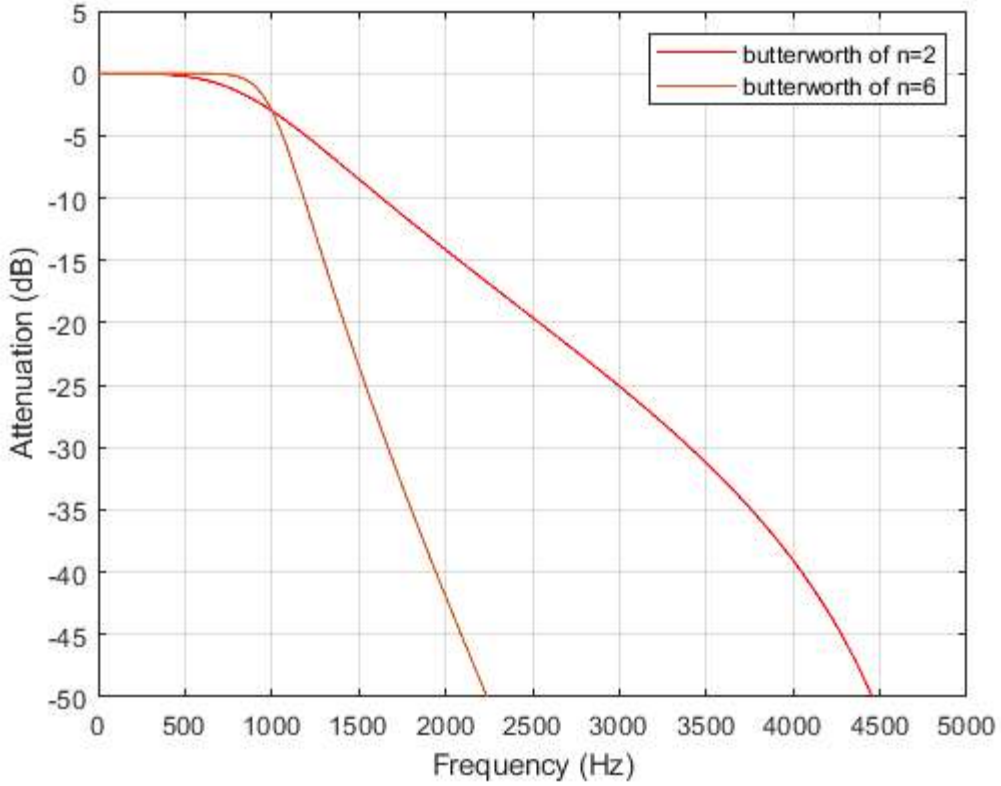

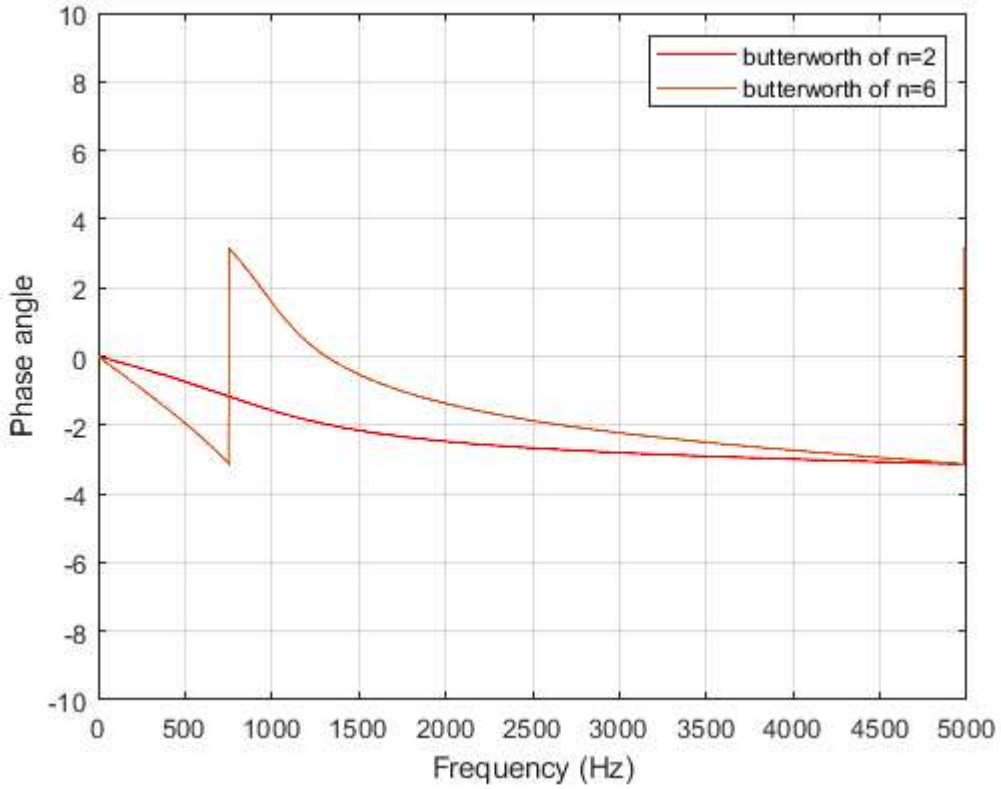

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