EGN3204 — Engineering Software Tools
Pensacola (82151) Section, Fall 2014
Problem Set #10 (November 20, 2014 Lecture)
(Word, Matlab R2013a)

James Davis

1. The matlab code for problems 1 is given in Figure 1 and the output for problems 1 is given in Figure 2. This is a band reject filter.

```
%James Davis, EGN3204, Fall 2014
% MATLAB m file for problem 1, Project 13

clear all
clear console

%define circuit component values
R = 1500;
L = 100e-6;
C = 100e-9;

num = [R*L*C 0 R];
den = [R*L*C L R];
system = tf(num,den);

figure(1)
set(cstprefs.tbxprefs,'FrequencyUnits','Hz')
bode(system,'k-')
grid on
title('Bode plot for question 1 by James Davis')
```

Figure 1. The matlab m file for problem 1.

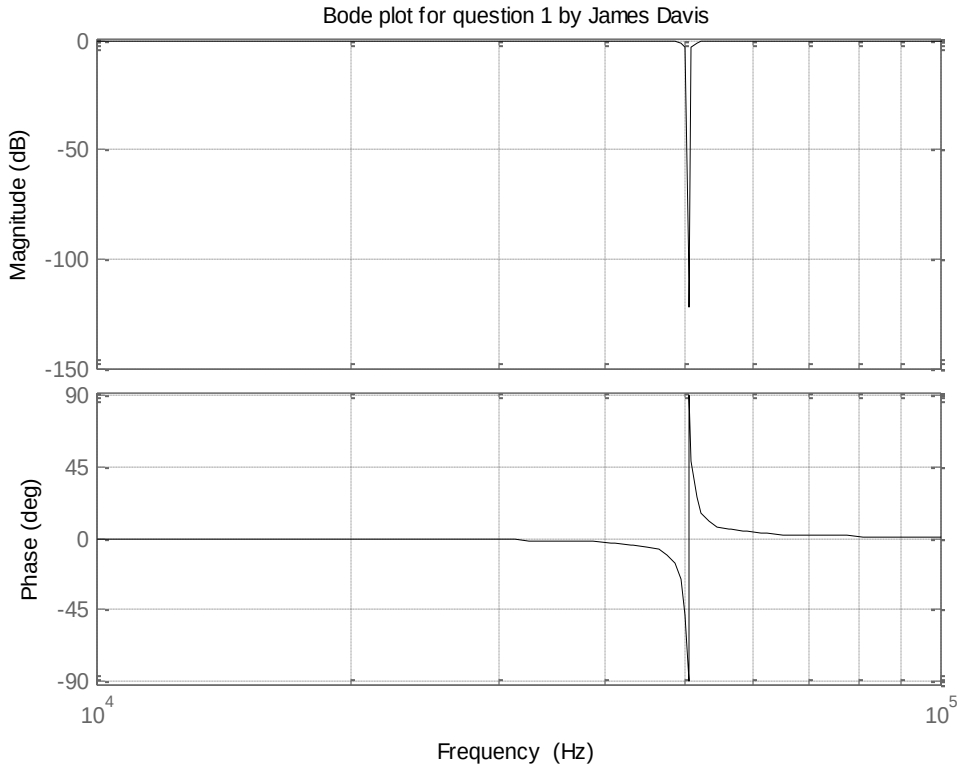

Figure 2. The matlab graph output for problem 1

2. The matlab code for problem 2 is given in Figure 3 and the output for problem 2 is given in Figure 4. This is a low pass filter.

```
%James Davis, EGN3204, Fall 2014
% MATLAB m file for problem 2, Project 13

clear all
clear console

%define circuit component values
R1 = 1000;
R2 = 3000;
C1 = 0.01e-6;
C2 = 10e-6;

num = [C1*R1*R2 R2];
den = [C2*R1*R2 R1];
system = tf(num,den);

figure(1)
set(cstprefs.tbxprefs,'FrequencyUnits','Hz')
bode(system,'k-')
grid on
title('Bode plot for question 2 by James Davis')
```

Figure 3. The matlab m file for problem 2

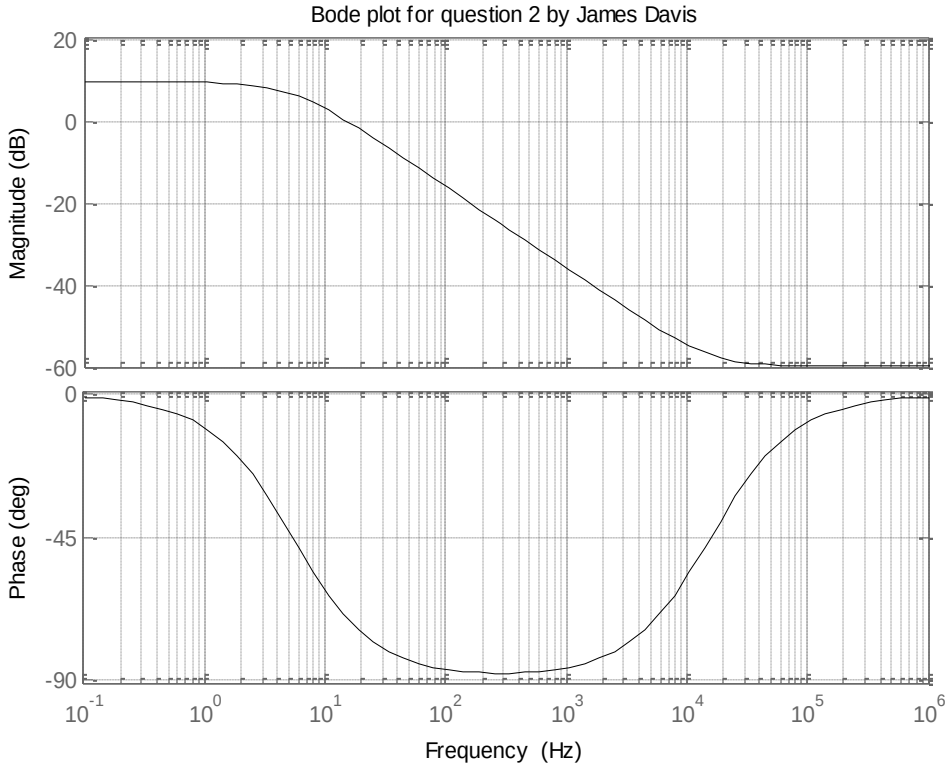

Figure 4. The matlab graph output for problem 2.

3. The matlab code for problem 3 is given in Figure 5 and the output for problem 3 is given in Figure 6.' This is a band pass filter.

```
%James Davis, EGN3204, Fall 2014
% MATLAB m file for problem 3, Project 13

clear all
clear console

%define circuit component values
R1 = 1300;
R2 = 2000;
C1 = 0.2e-6;
C2 = 0.4e-6;

num = [-C1*R2 0];
den = [R1*R2*C1*C2 R1*C1+R2*C2 1];
system = tf(num,den);

figure(1)
set(cstprefs.tbxprefs,'FrequencyUnits','Hz')
bode(system,'k-')
grid on
title('Bode plot for question 3 by James Davis')
```

Figure 5. The matlab m file for problem 3

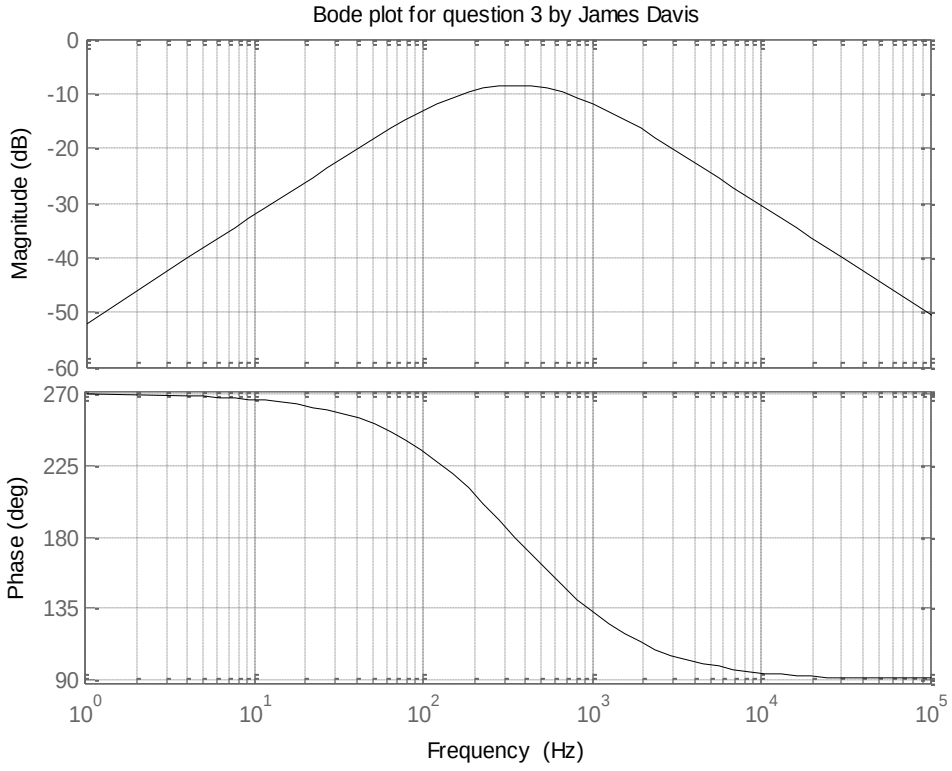

Figure 6. The matlab graph for problem 3.

4. The matlab code for problem 4 is given in Figure 7 and the output for problem 4 is given in Figure 8. This is a high pass filter.

```
%James Davis, EGN3204, Fall 2014
% MATLAB m file for problem 3, Project 13

clear all
clear console

%define circuit component values
R1 = 20000;
R2 = 200000;
C1 = 0.1e-6;

num = [-C1*R2 0];
den = [C1*R1 1];
system = tf(num,den);

figure(1)
set(cstprefs.tbxprefs,'FrequencyUnits','Hz')
bode(system,'k-')
grid on
title('Bode plot for question 4 by James Davis')
```

Figure 7. The matlab m file for problem 4.

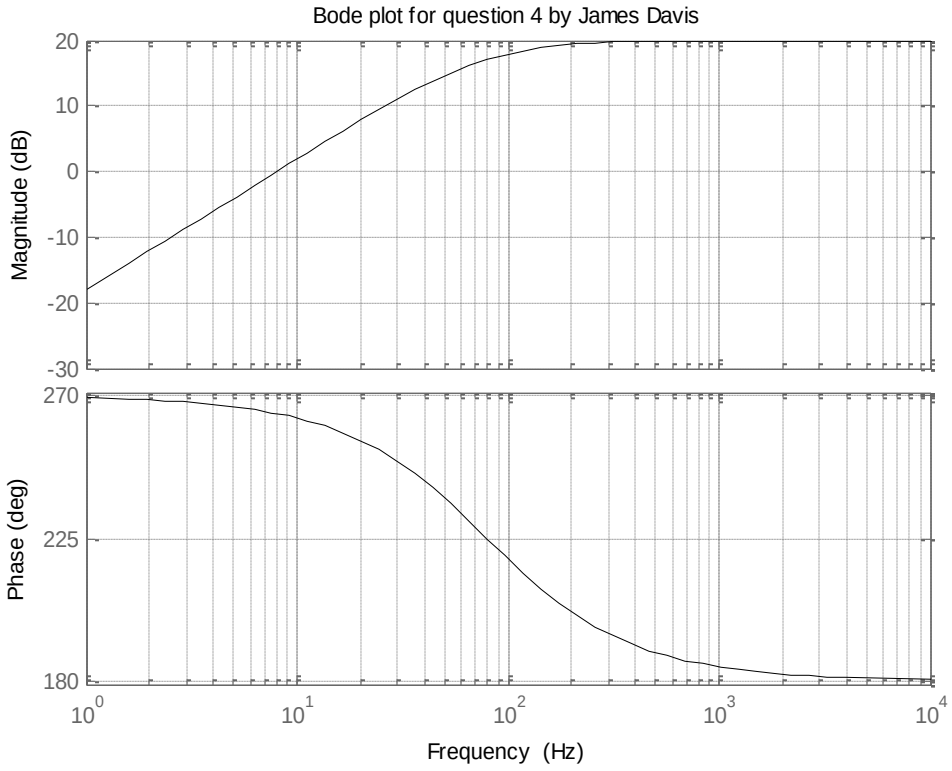

Figure 8. The matlab graph for problem 4.