Creating our static variables

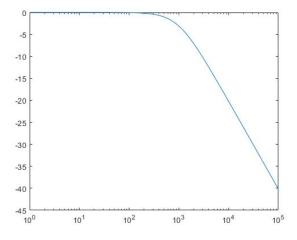
Creating the function

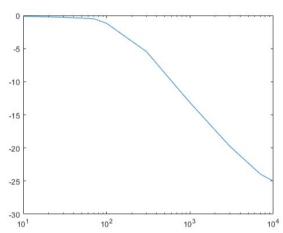
```
function F = freqresp3(G,C,b,w)
mag = zeros(3,1);

for k = 1:length(w)
    omega = w(k);
    A = G+j*omega*C;
    x = A\b;
    mag = [mag abs(x)];
end

V3 = mag(3, 2:length(w)+1);

F = 20*log10(V3);
end
```





1) Theoretical Data

2) Experimental Data

Creating our static variables

Creating the function

```
function F = freqresp3(G,C,b,w)

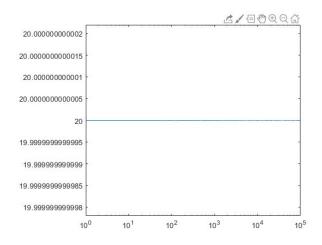
mag = zeros(3,1);

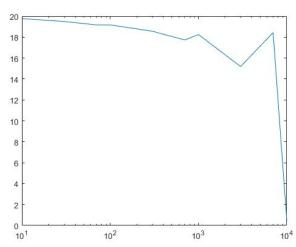
for k = 1:length(w)
    omega = w(k);
    A = G+j*omega*C;
    x = A\b;
    mag = [mag abs(x)];

end

V3 = mag(3, 2:length(w)+1);

F = 20*log10(V3);
end
```





1) Theoretical Data

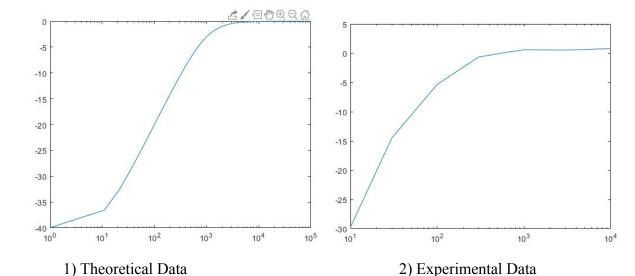
2) Experimental Data

Creating our static variables

Creating the function

```
function F = freqresp3(G,C,b,w)
mag = zeros(3,1);
for k = 1:length(w)
    omega = w(k);
    A = G+j*omega*C;
    x = A\b;
    mag = [mag abs(x)];
end

V3 = mag(3, 2:length(w)+1);
F = 20*log10(V3);
end
```



Experimental Data for Problem 8

```
%% Low Pass Filter
A = [10, 30, 70, 100, 300, 700, 1000, 3000, 7000, 10000];
Vin = [0.96, 0.992, 1.00, 1.03, 1.02, 1.01, 1.02, 1.01, 1.01, 1.00];
Vout = [0.944, 0.96, 0.944, 0.896, 0.544, 0.288, 0.224, 0.104, 0.064, 0.056];
B = Vout./Vin;
F = 20*log10(B);
semilogx(A, F)
%% All Pass Filter
A = [10, 30, 70, 100, 300, 700, 1000, 3000, 7000, 10000];
Vin = [0.920, 0.992, 1.03, 1.03, 1.01, 1.06, 0.96, 1.03, 0.424, 0.312];
Vout = [8.96, 9.36, 9.36, 9.36, 8.56, 8.16, 7.84, 5.92, 3.54, 0.328];
B = Vout./Vin;
F = 20*log10(B);
semilogx(A, F)
%% High Pass Filter
A = [10, 30, 70, 100, 300, 700, 1000, 3000, 7000, 10000];
Vin = [0.984, 1.03, 1.06, 1.09, 1.06, 1.03, 0.992, 0.768, 0.464, 0.352];
Vout = [0.032, 0.194, 0.42, 0.589, 0.984, 1.06, 1.06, 0.816, 0.504, 0.384];
B = Vout./Vin;
F = 20*log10(B);
semilogx(A, F)
```

Some Error Calculations on Output Voltage:

Low Pass Filter:

$\omega = 100$	\Rightarrow Theoretical = 0.995; Experimental = 0.896	\Rightarrow Error = -9.95%
$\omega = 1000$	\Rightarrow Theoretical = 0.700; Experimental = 0.224	\Rightarrow Error = -67.57%
$\omega = 10000$	\Rightarrow Theoretical = 0.098; Experimental = 0.056	\Rightarrow Error = -42.61%

All Pass Filter:

$\omega = 100$	\Rightarrow Theoretical = 10.000; Experimental = 9.360	\Rightarrow Error = -6.40%
$\omega = 1000$	\Rightarrow Theoretical = 10.000; Experimental = 7.840	\Rightarrow Error = -21.60%
$\omega = 10000$	\Rightarrow Theoretical = 10.000; Experimental = 0.328	\Rightarrow Error = -96.72%

High Pass Filter:

```
\omega = 100 \Rightarrow Theoretical = 0.100; Experimental = 0.589 \Rightarrow Error = +489.0% \Rightarrow Error = +49.93% \Rightarrow Error = +49.93% \Rightarrow Error = -61.41%
```