

- 1.32** Consider the following Chebyshev II lowpass filter that will be discussed in detail in Chapter 8.

$$H_a(s) = \frac{3s^4 + 499s^2 + 15747}{s^5 + 20s^4 + 203s^3 + 1341s^2 + 5150s + 15747}$$

Write a MATLAB script the uses the FDSP toolbox function *f_freqs* to compute the magnitude response of this filter. Plot it over the range $[0, 3]$ Hz. This filter is optimal in the sense that the stopband ripples are all of the same size.

Solution

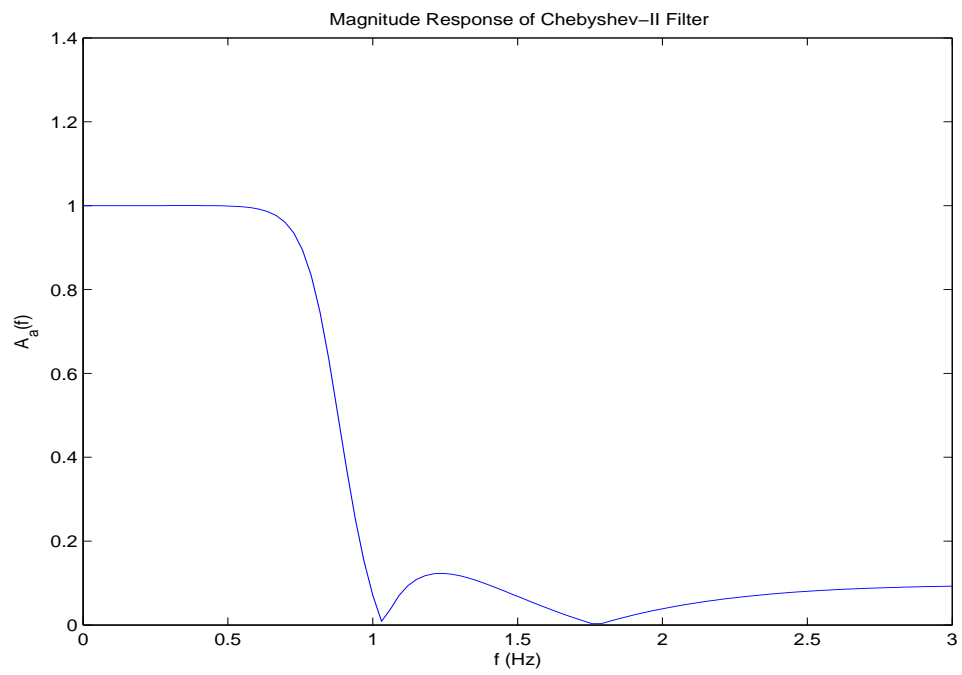
```
% Problem 1.32

% Initialize

clc
clear
N =100;
fmax = 3;
b = [3 0 499 0 15747]
a = [1 20 203 1341 5150 15747]

% Compute and plot magnitude response

[H_a,f] = f_freqs (b,a,N,fmax);
A_a = abs(H_a);
figure
plot (f,A_a)
f_labels ('Magnitude Response of Chebyshev-II Filter','f (Hz)','A_a(f)')
axis([0 3 0 1.4])
f_wait
```



Chebyshev-II Filter