

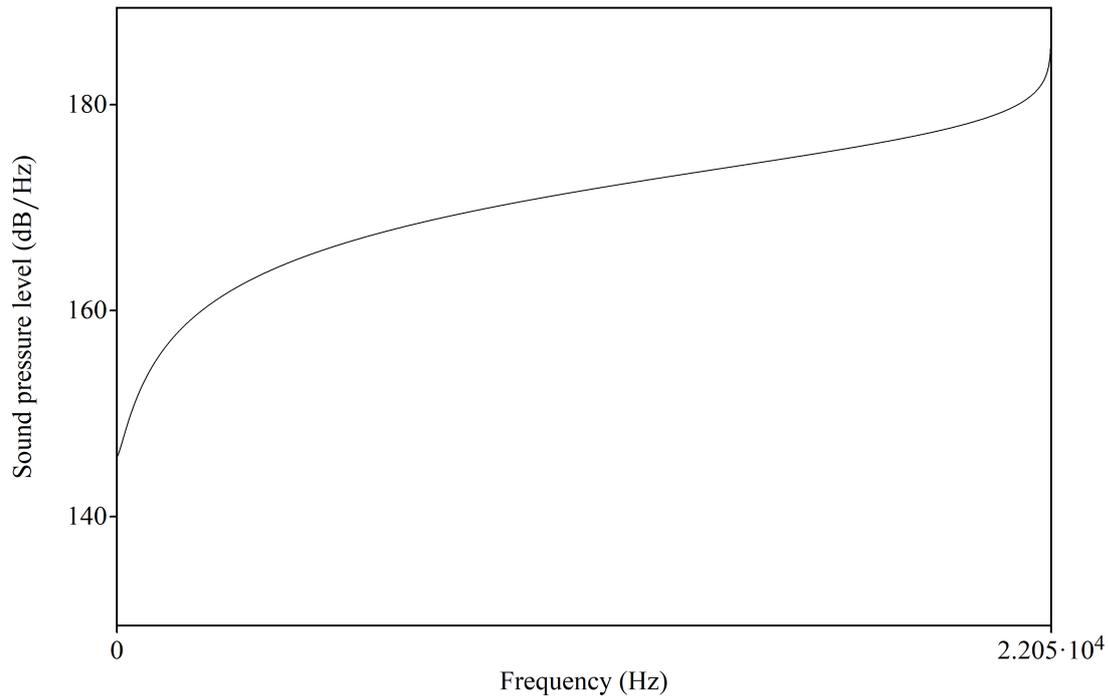
Homework 6

# Filtering

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## 6.1



This is a non-recursive filter.

## 6.2

```
form Set FF Bw and SF
    positive Formant_frequency 100
    positive Bandwidth 10
    positive Sampling_frequency 44100
endform

f1 = formant_frequency
b1 = bandwidth
dT = 1 / sampling_frequency

r = exp (-pi * b1 * dT)
c = - r^2
b = 2 * r * cos (2 * pi * f1 * dT)

appendInfoLine: "b: ", b, ", c: ", c
```

## 6.3

$b = 1.93, c = -0.96$

## 6.4

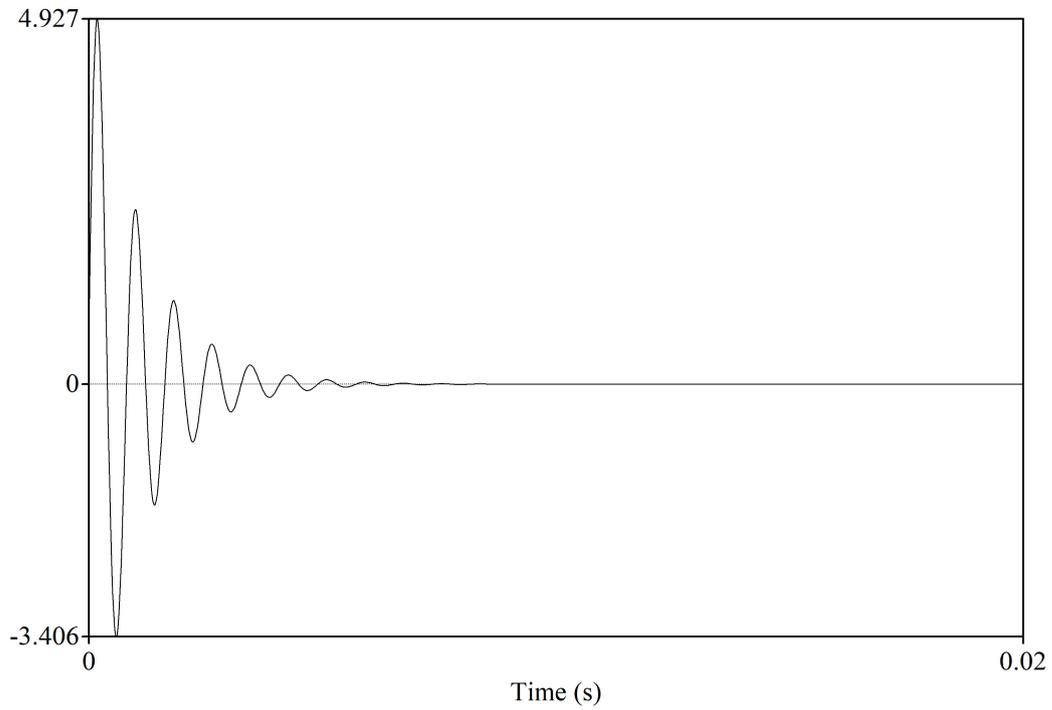
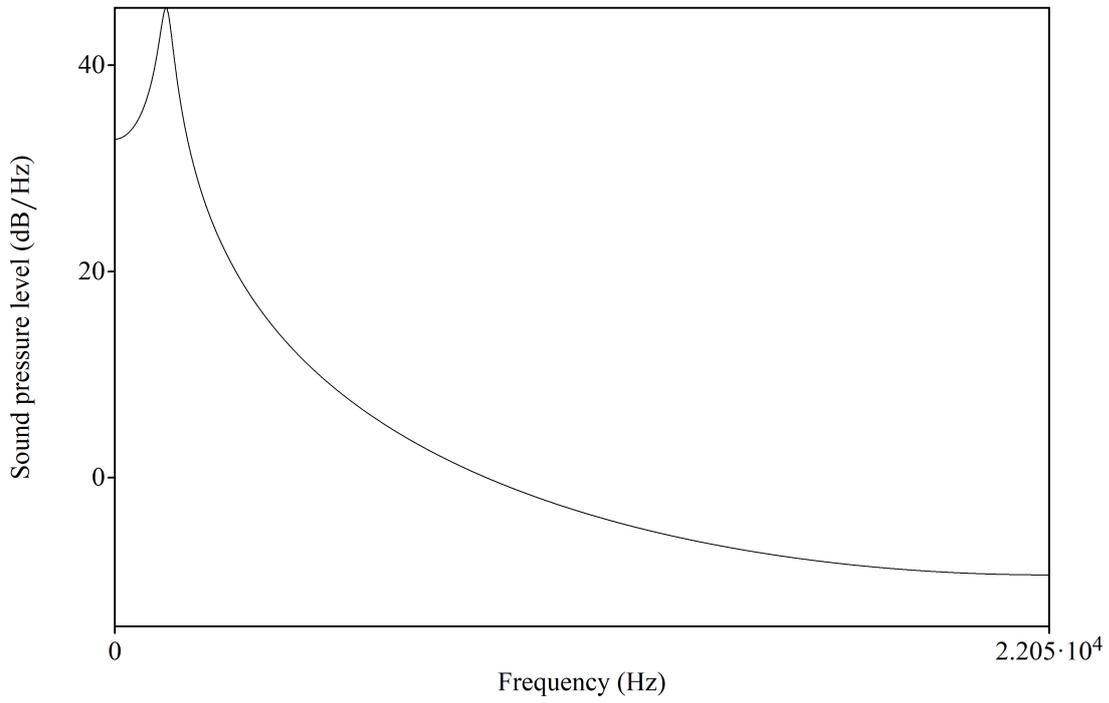


Figure 1: With  $b$  and  $c$  from 6.3

- a** Sample 1 is equal to 1 by definition. Each following sample is  $b$  times the one before it, plus  $c$  times the sample before that. If any of these previous samples don't have a value, they're considered to be equal to 0.

**b**



**c** 60 Hz

**6.5**

