Lab #1
ECE-2026   Spring-2025
LAB COMPLETION REPORT

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Part 3.1 Write the string reversal output below and show it to the instructor.

leoG arduR

Part 3.2 Replace the inner `for` loop with only one or two lines of vectorized MATLAB code. Write the MATLAB code in the space below:

```
%% Your code here
ccsum2 = zeros(1,500);
tt2 = dt*[1:1:500]; % generate the timestamps

for kx = 1:length(XX)

    Ak = abs(XX(kx));
    phik = angle(XX(kx));

    ccsum2 = Ak*cos(2*pi*freq*tt2 + phik);
```

Part 3.3 Show the plot of a decaying sinusoid.

See   Following   Pages

Part 3.4 Read in a voice file and plot a section. Locate a vowel region containing a quasi-periodic waveform with higher amplitude than neighboring consonant sections. Measure the pitch period, which is the duration of a period in the vowel sound. The inverse of it is called pitch which is a vibrating frequency of a speaker's glottis when pronouncing the vowel. We will come back to this issue later in Lab #3.
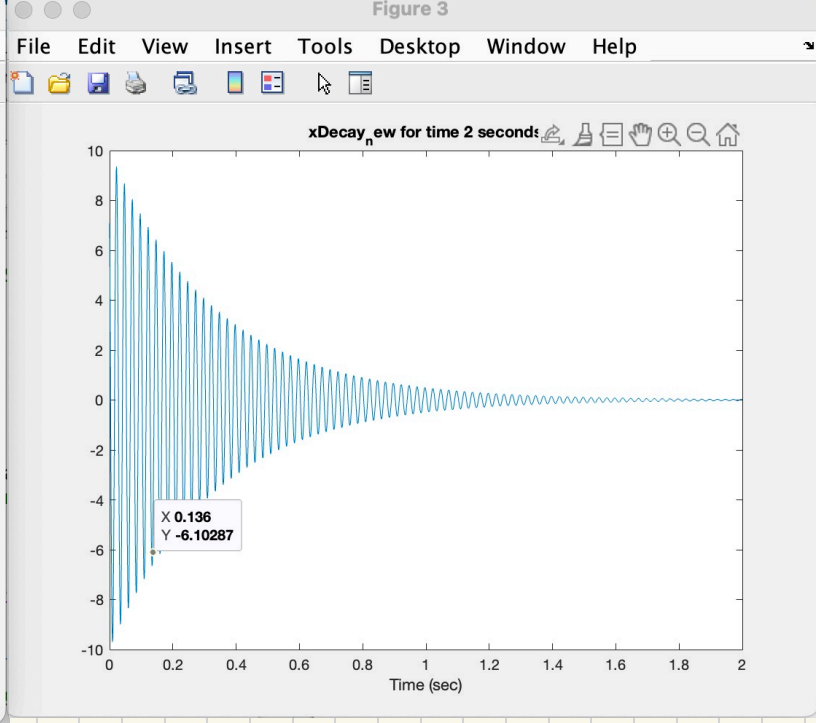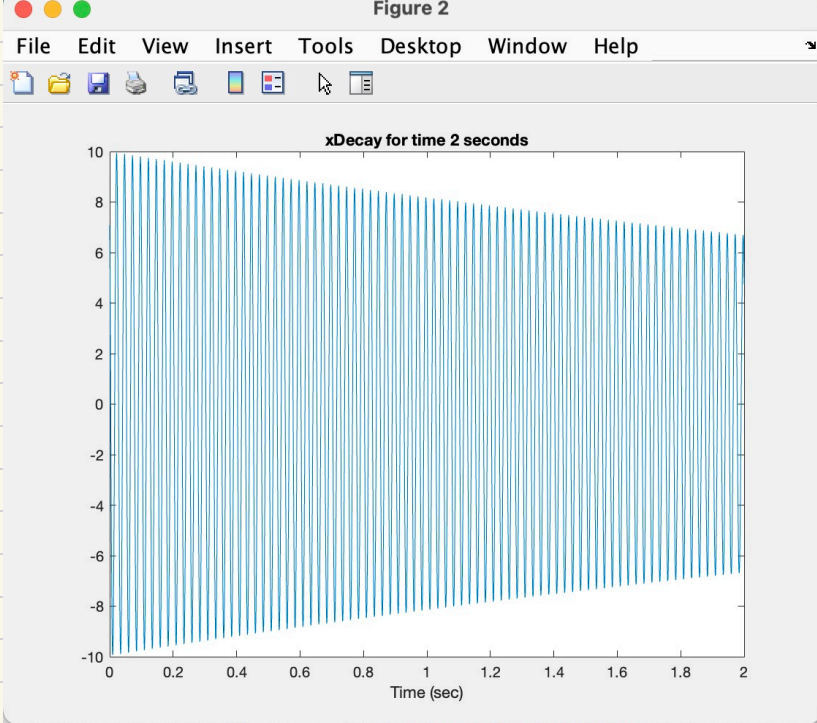
$$t_{P_1} = .3459$$

$$t_{P_2} = .3385$$

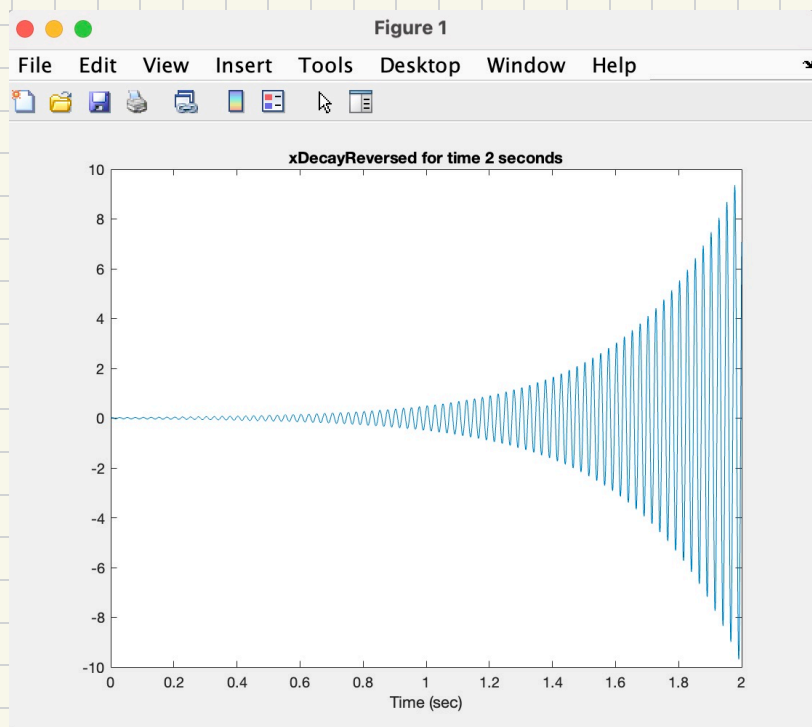$$t_{P_2} - t_{P_1} = \text{Pitch Period} = .0074s$$

$$\Delta t_{P21} = .0074$$

$$(\Delta t_{P21})^{-1} = 135.14 \text{ Hz}$$

Part 3.5.1 Show the plot of a time-reversed decaying sinusoid.

See following   Pages

Figure 2

File Edit View Insert Tools Desktop Window Help

xDecay for time 2 seconds

Time (sec)

Figure 3

File Edit View Insert Tools Desktop Window Help

xDecay$_{new}$ for time 2 seconds

X 0.136
Y -6.10287

Time (sec)

P 3.3

Figure 1

File Edit View Insert Tools Desktop Window Help

xDecayReversed for time 2 seconds

Time (sec)

P 3.5.1

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