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Assignment 2
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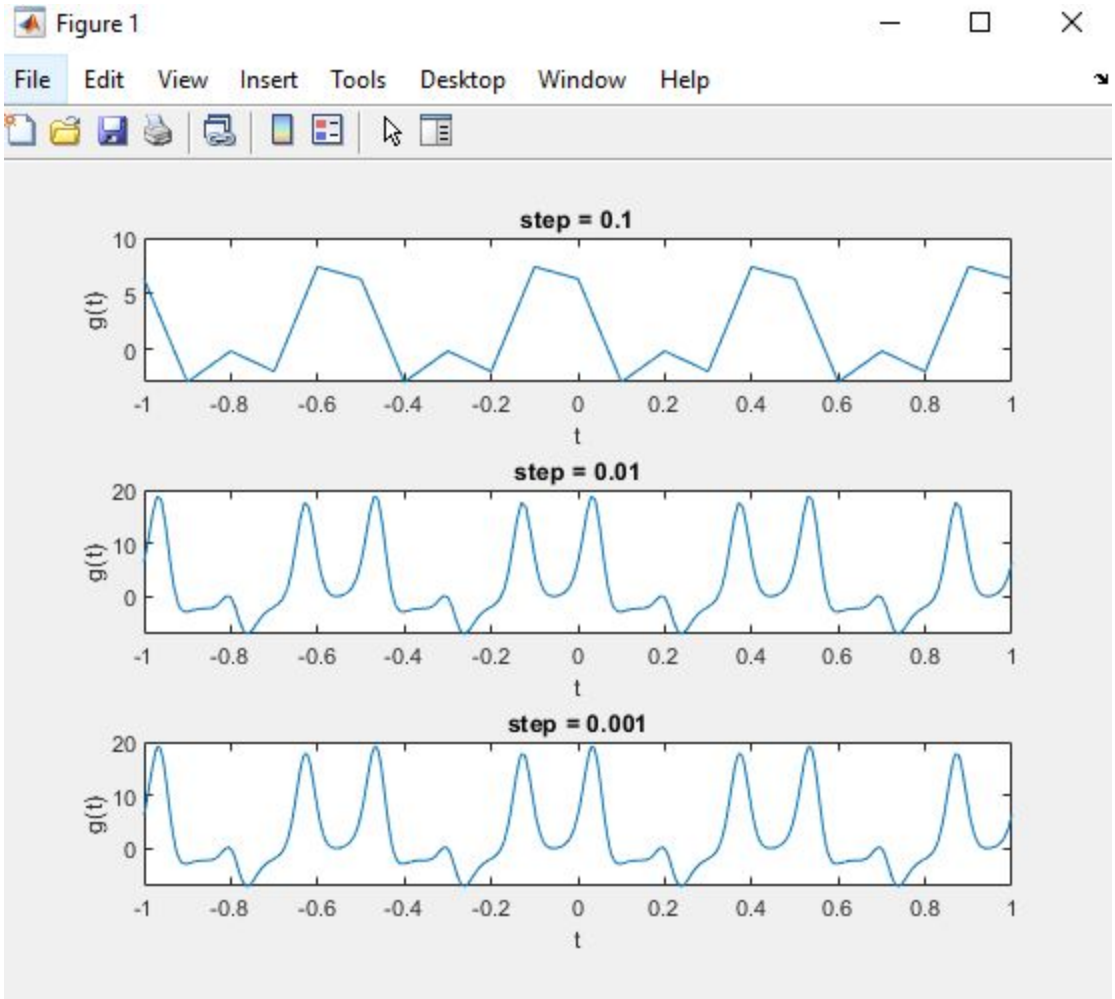
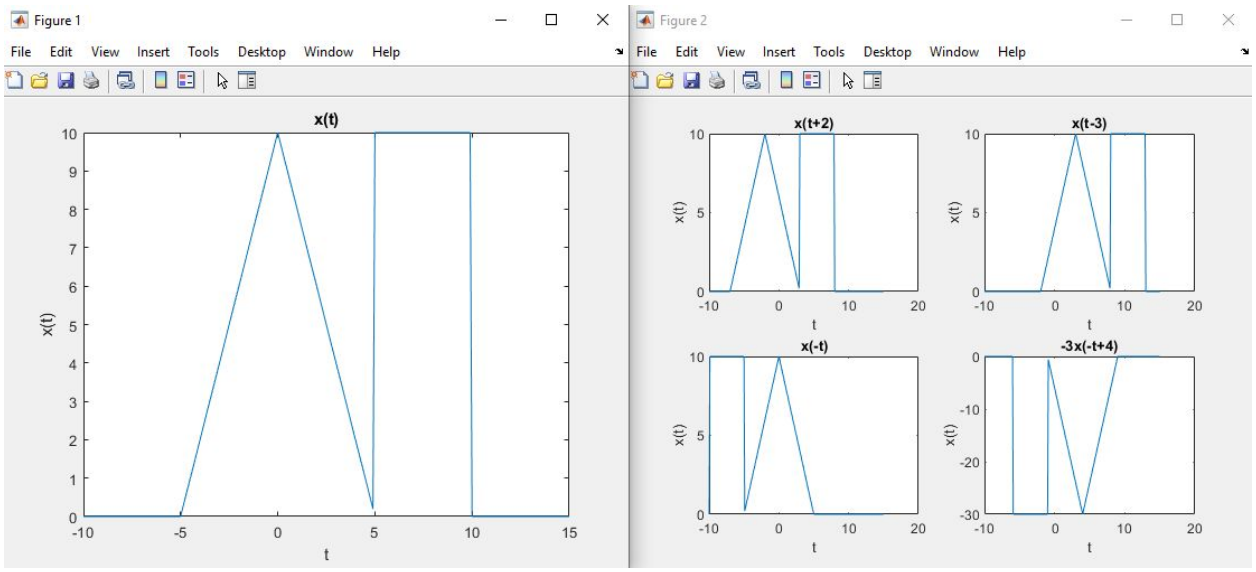
1. For this question, I used the anonymous function definition to define g(t). Then, I defined t1, t2, and t3, which are the same windows, but with different step sizes. Then I plotted g(t) for each step size, and labelled the three plots. The period is 0.5s.

Output:



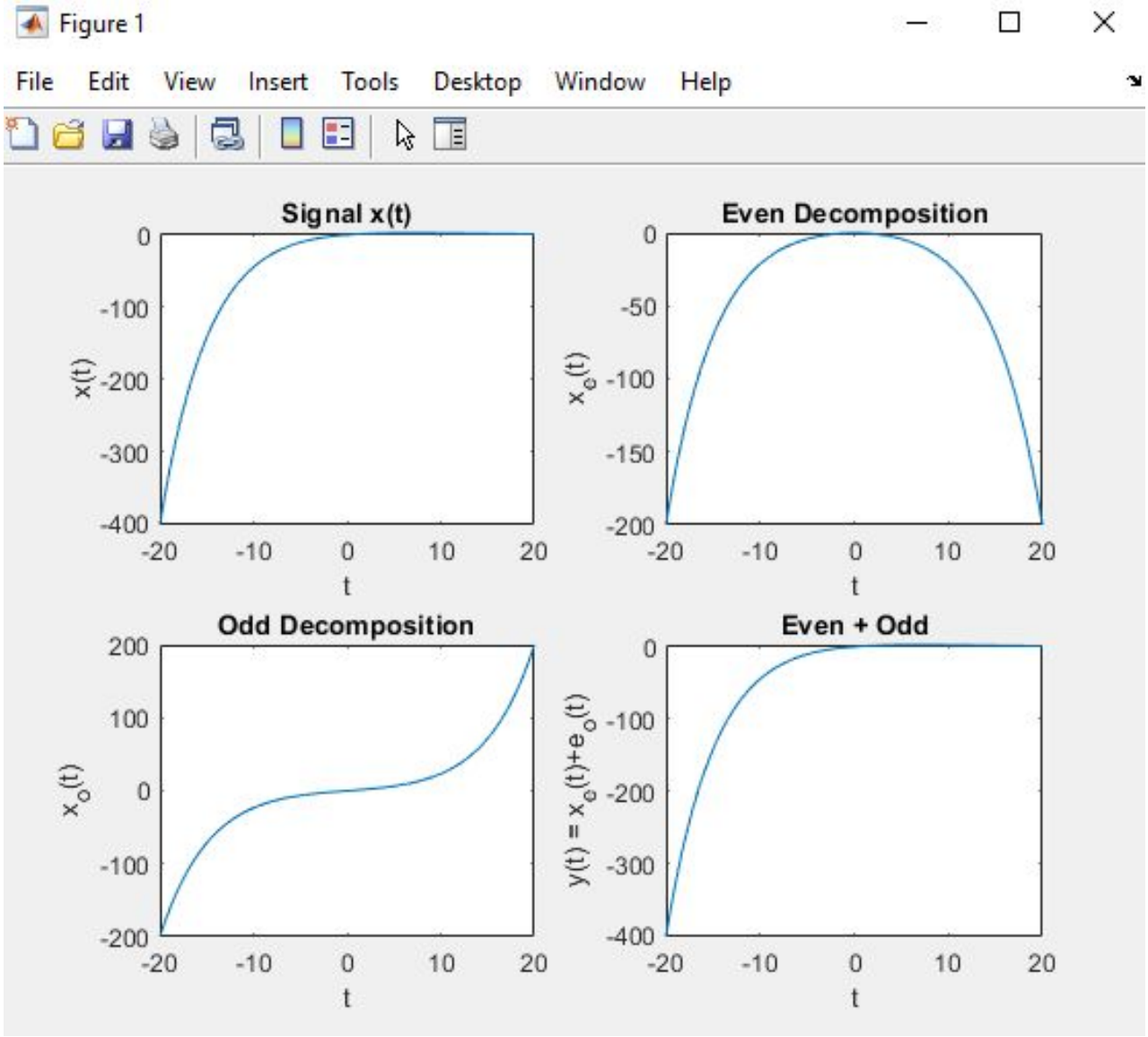
2. For this question, I created a function called signal, that handles the piecewise behavior of the specified function. Inside this function, I used a set of if, elseif, and else statements to handle the 3 different parts of the piecewise function. Then, I used the command arrayfun(), the function signal, and the different variations of input t to create vectors for the output. I then plotted the original function on one figure, and the other four on a separate figure. I then labelled each of these plots.

Output:



3. For this question, I used the equation given in the guide to create vectors representing the even and odd decompositions of the signal x(t), and took the sum of them to find signal y(t). I then used subplots to plot them all on the same figure, and label each one of them.

Output:



4. For this question, I took the function g(t) from problem 1, and calculated the energy using the trapz() command. I defined the single_period t- be 0.25:0.75 with 0.01 step size, and t to be the window -1:1 with step size 0.001, which was given in problem 1. I then used the energy and period, which is just 0.75-0.25 to calculate the power of the signal.

Output:

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>> Question4

energy_period =

   27.3775


power =

   54.7550

>>
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5. For this question, I used nested for loops in order to define the signals y1 and y2, which correspond to the two cases of the orchestra. N corresponded to the number of steps between 159Hz and 161Hz given the step sizes 0.04Hz and 0.02Hz, so I just used a for loop to calculate the summation of the different frequencies for 0 <= t <= 200. I then plotted the two cases y1 and y2 on the same plot, and labelled the two cases.

Output: