Signals and Systems

Lab – 1 Review

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Figure 1

We see x(t) function which is created by 4 different vectors as described in lab sheet.

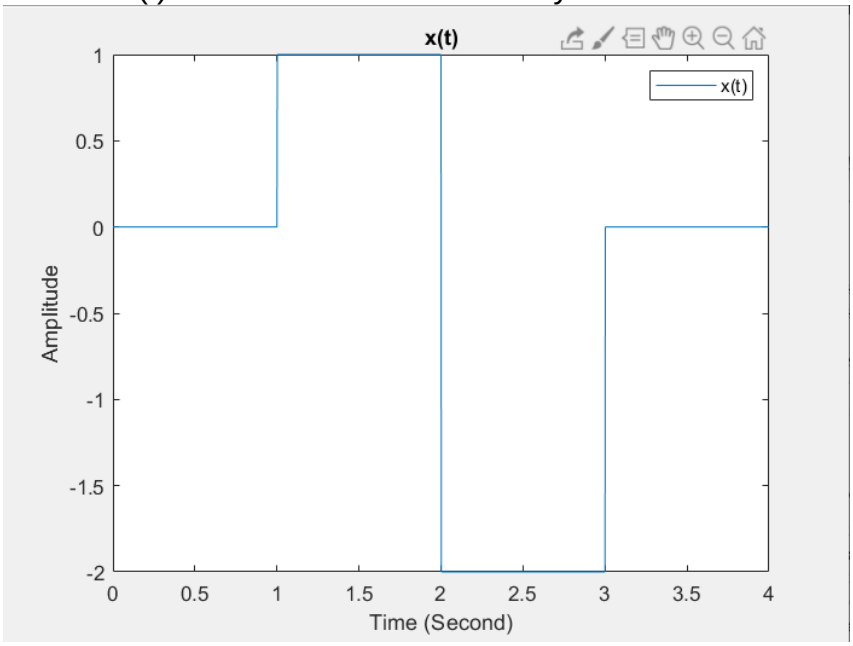

Figure 2

We see the multiplication of cos(2pi50t) and x(t). Amplitude of cosine is 1 thus, x(t) specifies the amplitude.

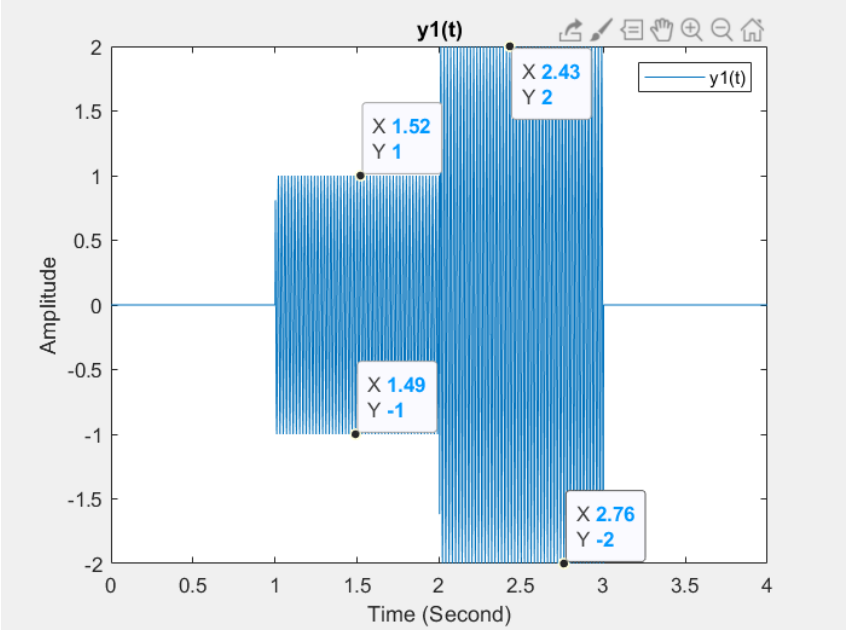

Figure 3

The graph we see upwards is absolute value of fourier transform of x(t) and downwards is absolute value of fourier transform of y1(t) by fft function. First one tells us that x(t) is a DC signal. On the other hand, second one tells us that y(t) has a signal which is 50Hz.

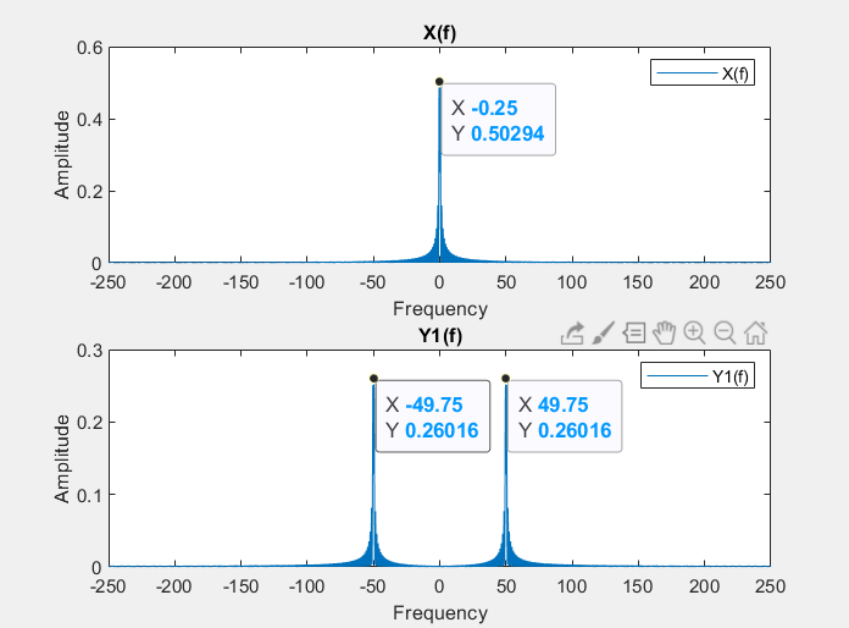

Figure 4

In this graph, elementwise multiplication of fourier transform of x(t) and x2(t) with reconfigured DFT points which is 2N-1. That's why, we see the overlapped graphs of two above(figure3).

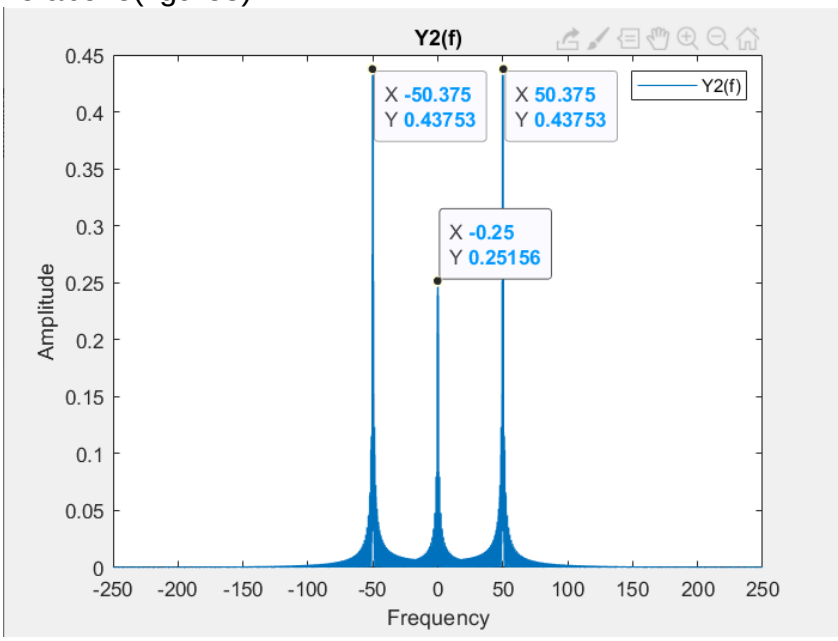

Figure 5

We obtained this graph with the operation of inverse fourier transform of Y2(f) above which gives us the convolution of x(t) and x2(t) because convolution in time domain is multiplication in frequency domain.

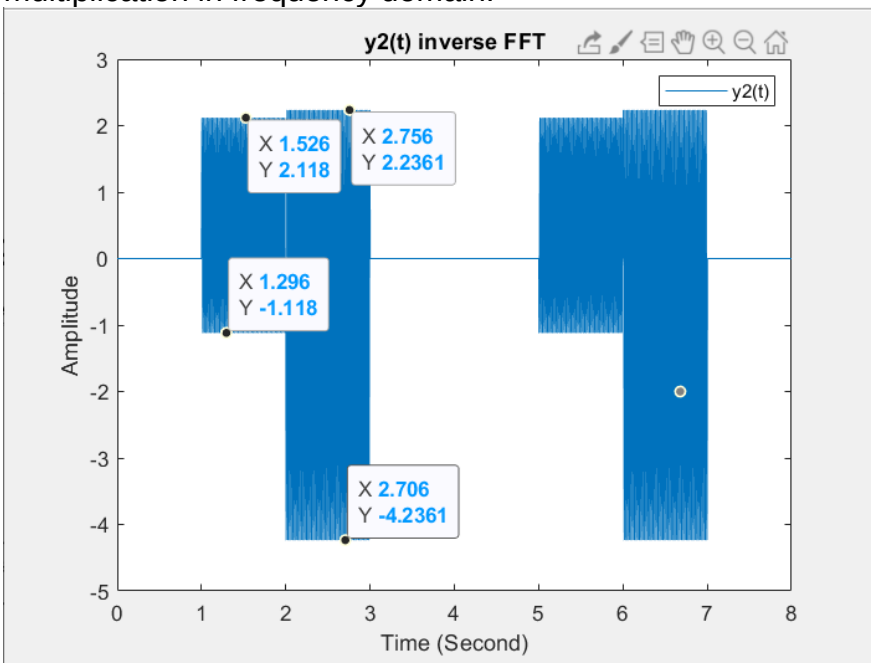

Figure 6

This graph plots the convolution of x(t) and x2(t). We observed same result as figure 5 because of multiplication and convolution property of fourier transform.

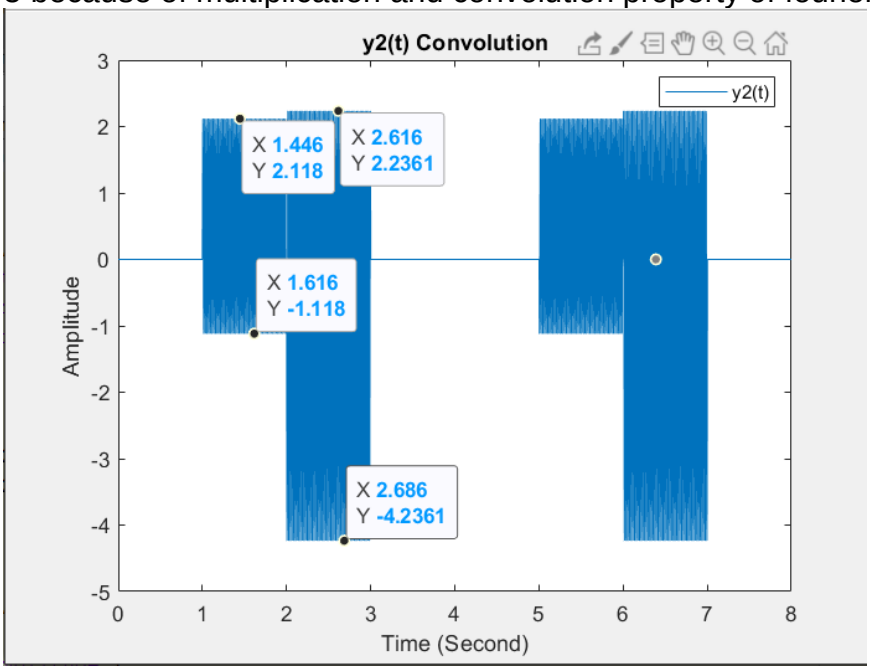

Figure 7

In this figure, I tried to show that we obtain same results in figure 5 and figure 6 with the linearity. The slope of the graph is 1, thus they are the same functions.