Signals and Systems

Lab – 2

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Figure 1

In this figure, we see that addition of X(f) and X2(f) result in the bottom graph. We have 60Hz and 250Hz peaks in the second graph because there are two cosines with frequencies of 60 and 250.

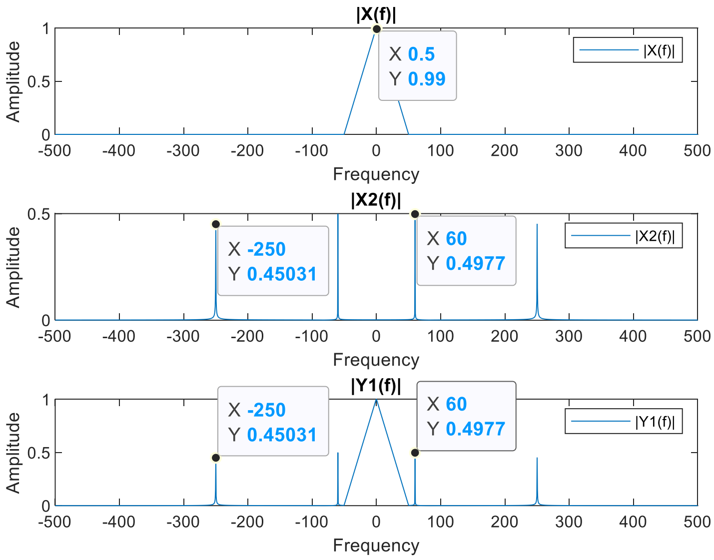


Figure 2

The ideal low pass filter with the frequency of -50Hz and 50Hz filters the signal of X(f) from Y1(f) because the boundaries of the filter only contain the components of X(f).

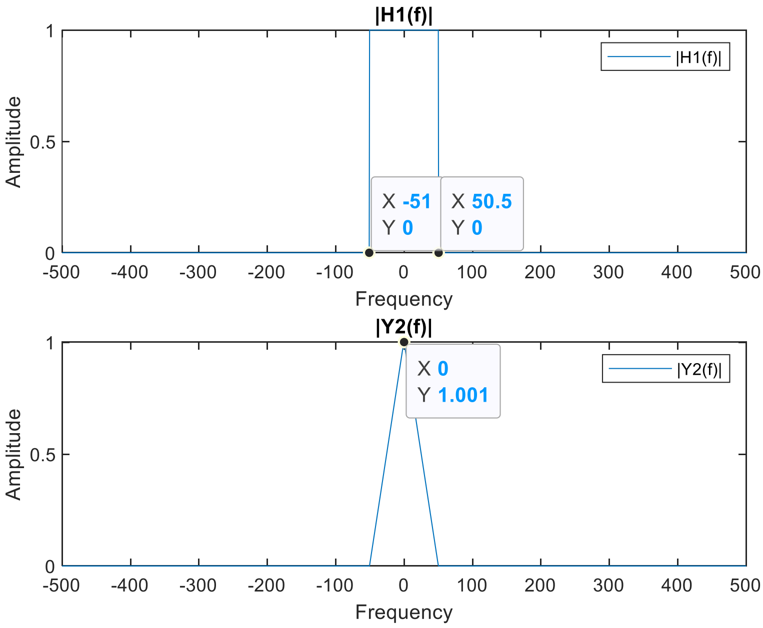
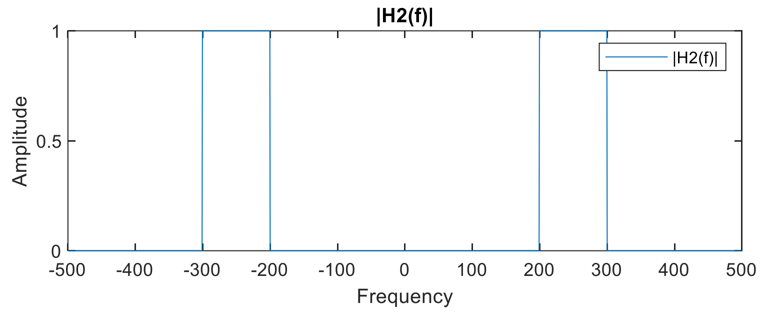


Figure 3

Just like figure 2, this time, we filtered the $\cos(500\pi t)$ components from Y1(t) thanks to the ideal bandpass filter. We obtain this because our filter only filters the components between 200Hz and 300Hz.



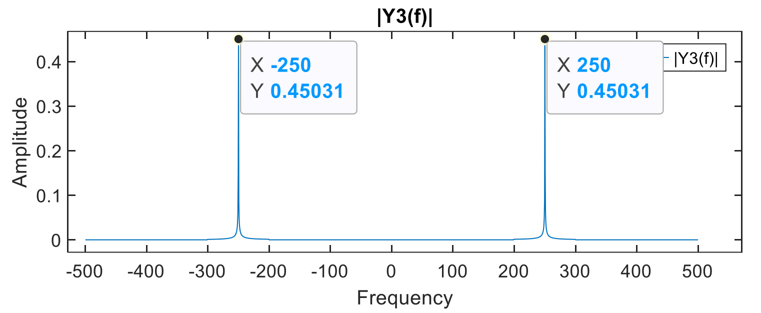


Figure 4

This is the same process before, but we have non ideal butter filter which results in almost the same result above. However, there is pretty little difference at the bottom of the graph below. Also, if we had components that are so close to 250Hz, it might not be able to filter as good as this with a non-ideal filter.