Faculty of Engineering & Technology Electrical & Computer Engineering Department

SIGNALS AND SYSTEMS

Matlab_Ass-1-

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Section: 1

Date: 15/6/2020

Abstract:

The aim of this assignment:

1- To learn how use matlab to solve any function

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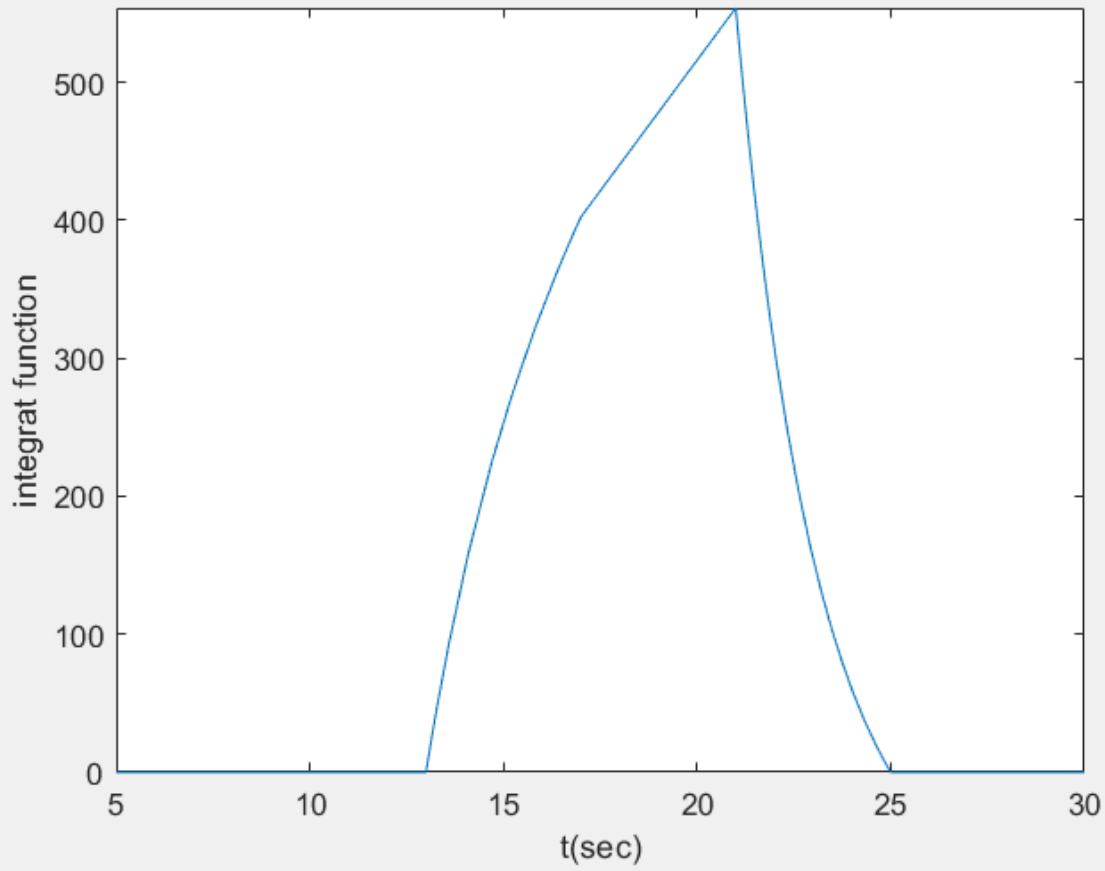
Procedure:

Q1)

Write a program that computes and plots the convolution of the functions $x(t) = (10e^{-0.5t}) \prod(\frac{t-7}{4})$, and and $y(t) = (10te-0.5t)\prod(\frac{t-12}{8})$



- **Conclusion**: The result is correct so that the solution for the MattLab and Personal solution are similar.

Q2)

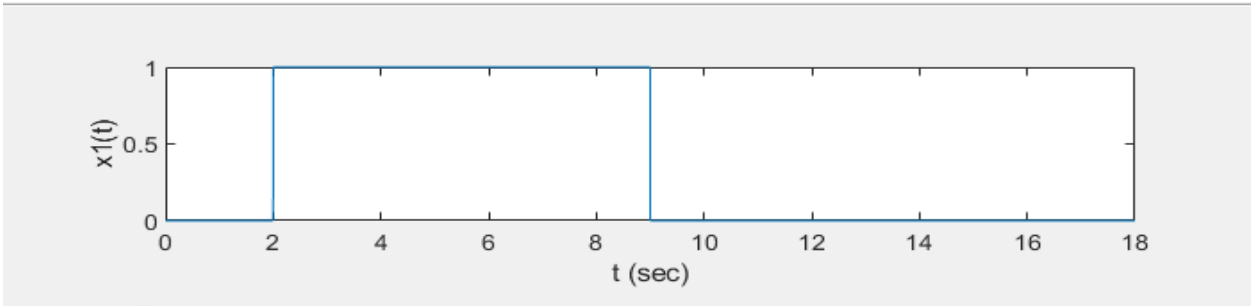
Generate and plot the following signals using MATLAB: 1. $X_1(t) = u(t-2) - u(t-9)$

2. A finite pulse $(Pi(t))$ with value = 8 and extension between 6 and 14

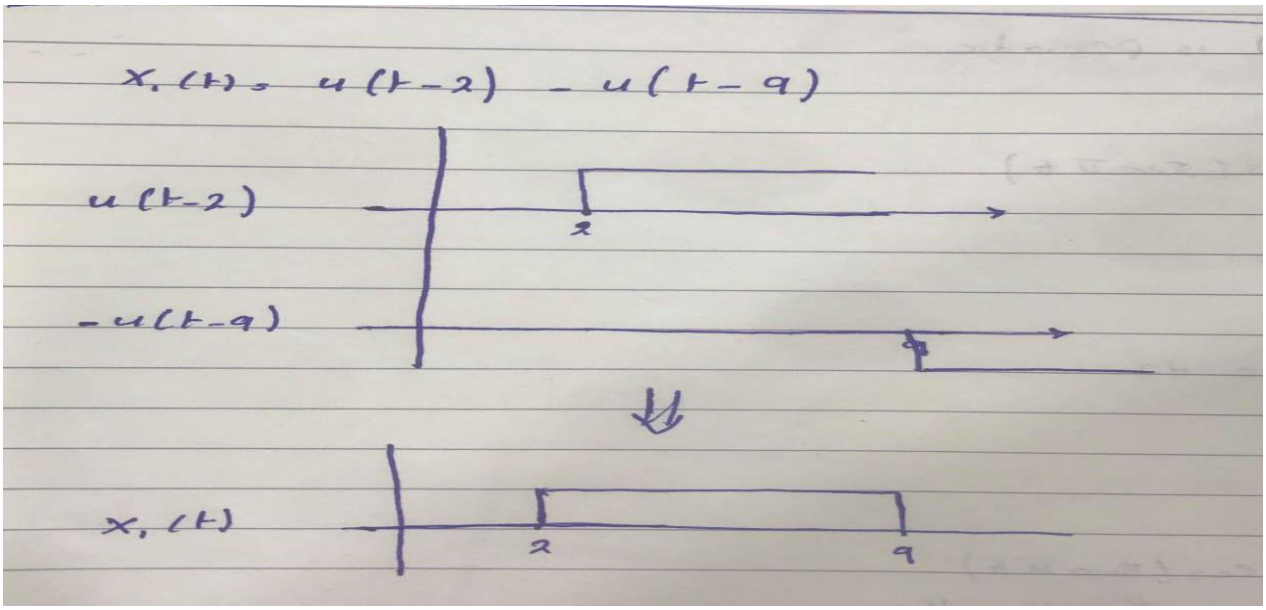
3. $X_2(t) = u(t-4) + r(t-4) - 2r(t-7) + r(t-13)$ in the time interval [0 16]

1-

X(t)=u(t-2)-u(t-9)



MATLAB solution

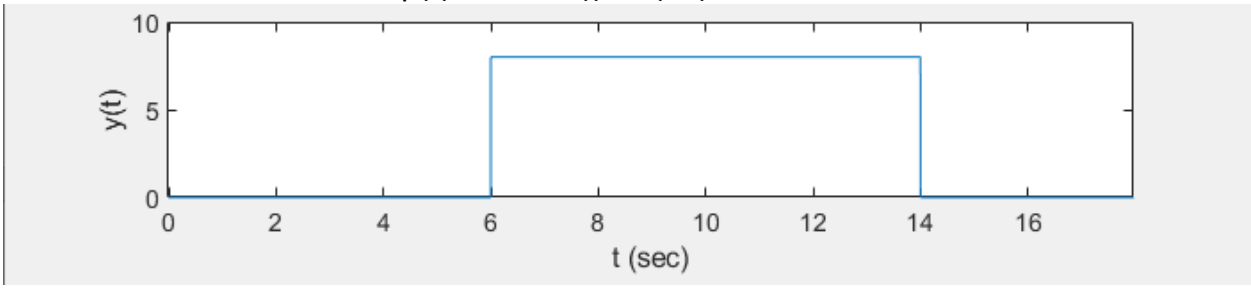


Personal solution

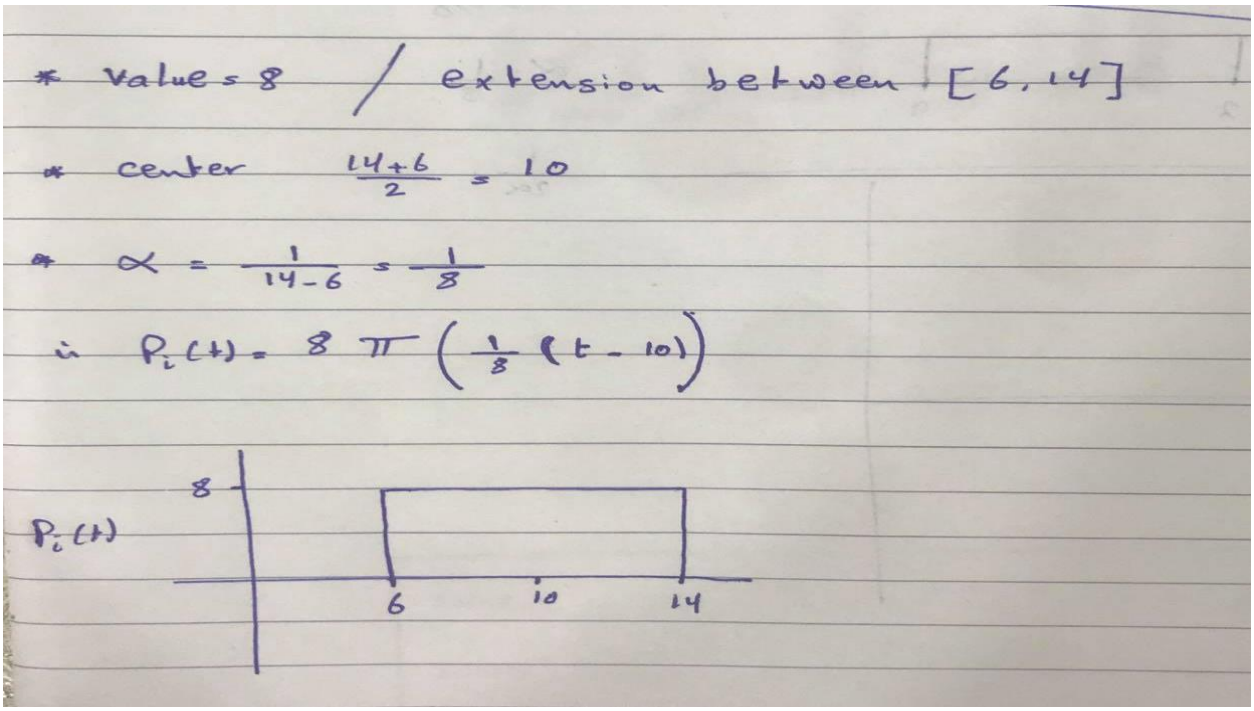
- **Conclusion**: The result is correct so that the solution for the MattLab and Personal solution are similar.

2-

p(t)=8*Pulse((t-10)/8)



MATLAB solution

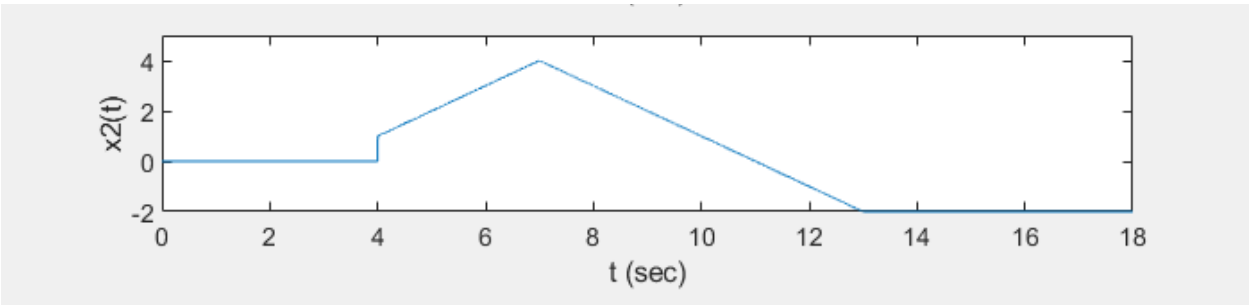


Personal solution

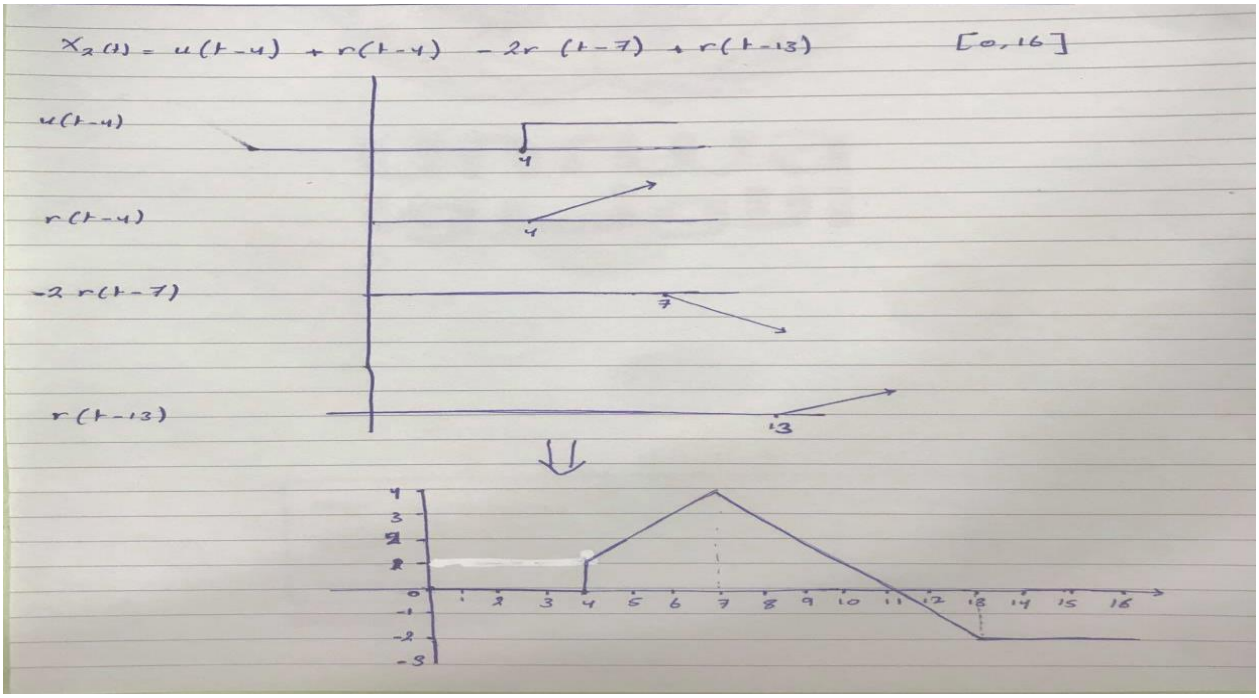
- **<u>Conclusion</u>**: The result is correct so that the solution for the MattLab and Personal solution are similar.

3-

x2(t)=u(t-4)+r(t-4)-2r(t-7)+r(t-13)



MATLAB solution



Personal solution

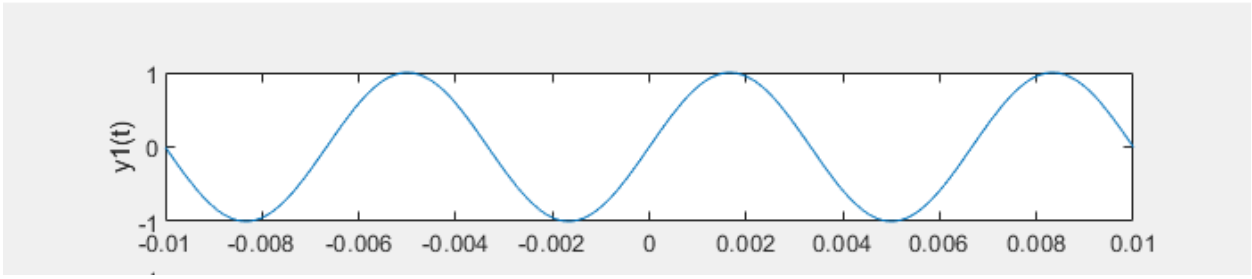
- **<u>Conclusion</u>**: The result is correct so that the solution for the MattLab and Personal solution are similar.

Q3)

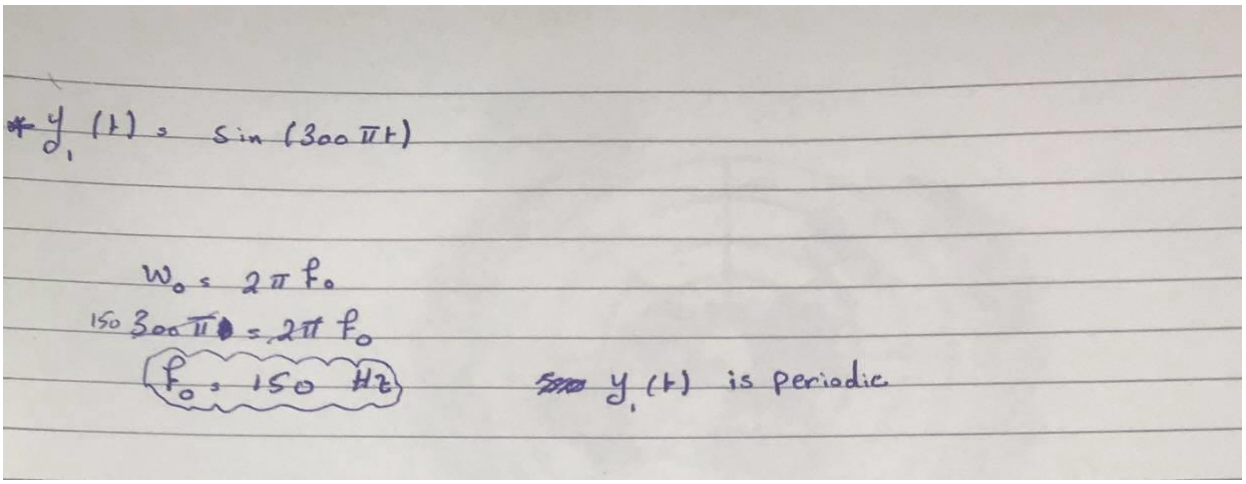
1. Generate and plot the signals $y_1(t) = sin(300\pi t), y_2(t) = cos(800\pi t)$, then determine and plot the signals $m(t) = y_1 + y_2$ and $n(t) = y_1 - y_2$.
2. Determine, using the MATLAB plots, if the generated signals are periodic. In case asignal is periodic, determine its fundamentalfrequency.

1-

Y1(t)=sin(300*pi*t)



MATLAB solution

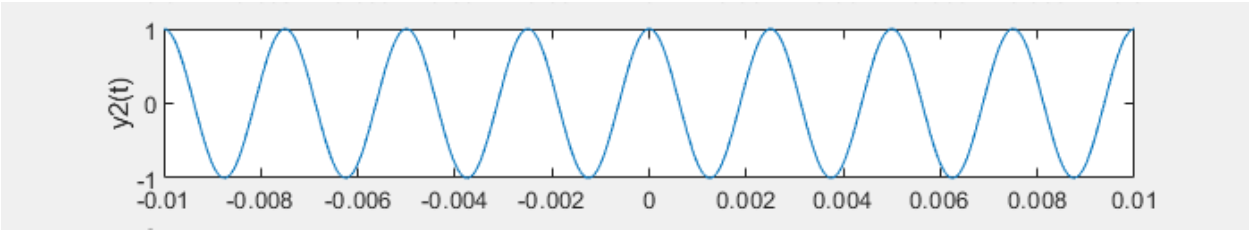


Personal solution

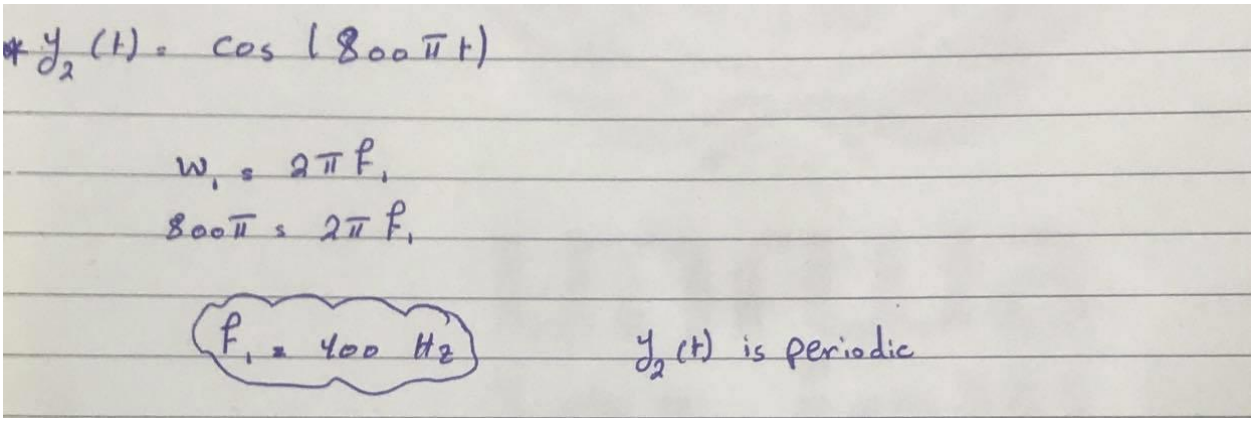
- **Notes:** As shown by MattLab solution that sin(300*pi*t) is a periodic function because of function (sin(300*pi*t)) repeats itself periodically. In addition to, the personal solution shown the function is periodic.
- **Conclusion**: The result is correct so that the solution for the MattLab and Personal solution are similar.

2-

Y2(t)=cos(800*pi*t)



MATLAB solution



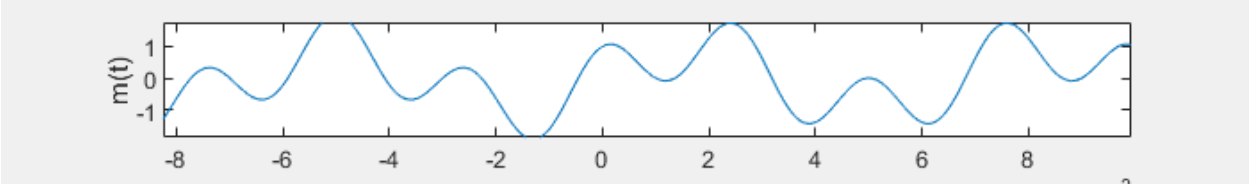
Personal solution

- **Notes:** As shown by MattLab solution that cos(800*pi*t) is a periodic function because of function (cos(800*pi*t)) repeats itself periodically. In addition to, the personal solution shown the function is periodic.

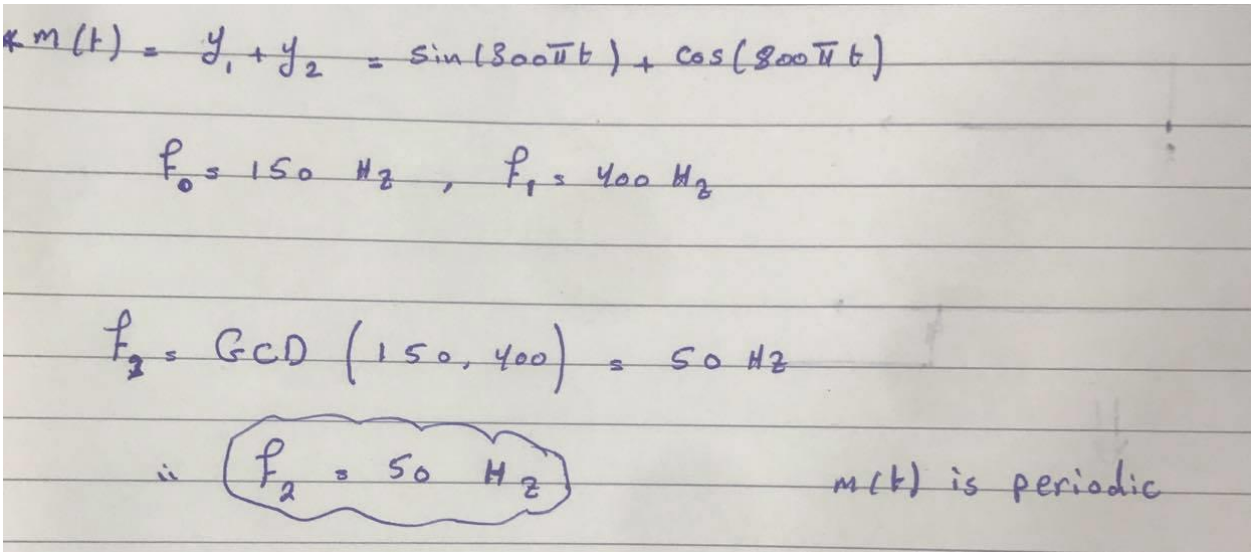
- **Conclusion**: The result is correct so that the solution for the MattLab and Personal solution are similar.

3-

m(t)= sin(300*pi*t)+ cos(800*pi*t)



MATLAB solution



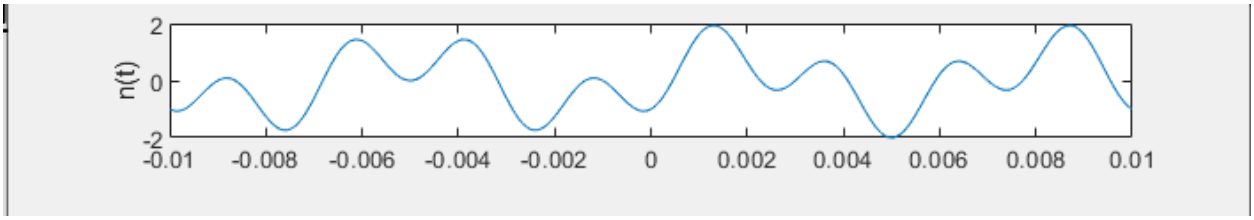
Personal solution

- **Notes:** As shown by MattLab solution that m(t)= sin(300*pi*t)+ cos(800*pi*t) is a periodic function because of function m(t) repeats itself periodically. In addition to, the personal solution shown the function is periodic.

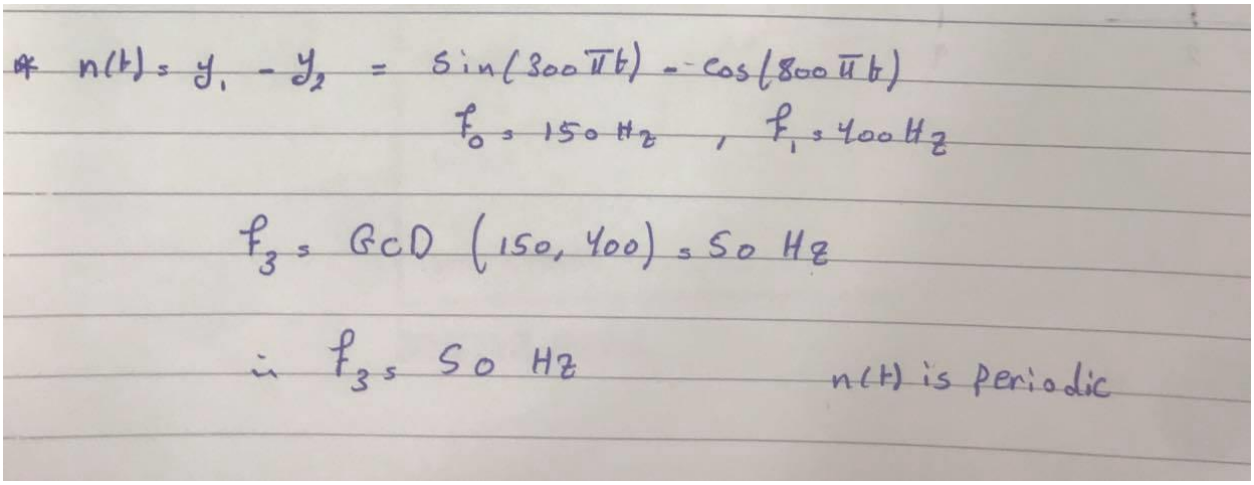
- **Conclusion**: The result is correct so that the solution for the MattLab and Personal solution are similar.

4-

n(t)= sin(300*pi*t)- cos(800*pi*t)



MATLAB solution



Personal solution

- **Notes:** As shown by MattLab solution that n(t)= sin(300*pi*t)+ cos(800*pi*t) is a periodic function because of function n(t) repeats itself periodically. In addition to, the personal solution shown the function is periodic.

- **Conclusion**: The result is correct so that the solution for the MattLab and Personal solution are similar.

Conclusion:

The matlab is a very easy program and can use it to solve any function , whether difficult or easy.

References:

https://www.youtube.com/playlist?list=PLnyw1IVZpaTu08ss_vLUk5gHC2wK0rWzE Accessed on 15/6/2020 at 3:50PM.