



American International University- Bangladesh
Department of Computer Science

Lab Report Cover Sheet

Course Name	Data Communication
Lab Report No.	1
Lecturer Name	Md. Navid Bin Anwar
Semester	Fall 2020-21
Submission Date	
Section	B
Group No.	

Student Name	Student ID	Contribution (out of 100%)
1. HOSSAIN, MD. SIBBIR	18-38828-3	100%
2.		
3.		
4.		
Lecturer Remarks (Only for teacher)		

ID: 18-38828-3

$$x_1(t) = A_1 \cos(2\pi \cdot 3882 \cdot t + j_1)$$

$$x_2(t) = A_2 \cos(2\pi \cdot 3882 \cdot t + j_2)$$

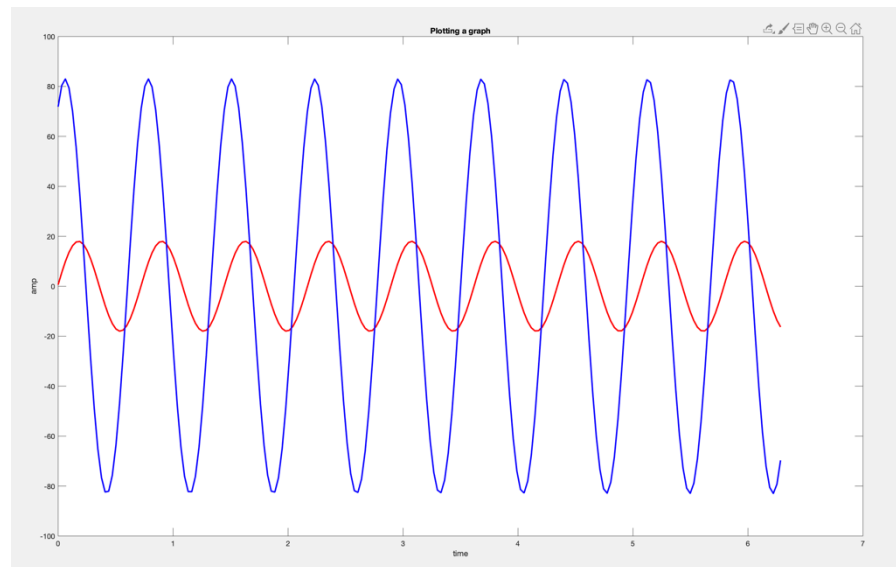
$A_1 = A_2 = 18$ and $A_2 = 83$

$$j_1 = 88^\circ \text{ and } j_2 = 30^\circ$$

$CDEF = 3882$

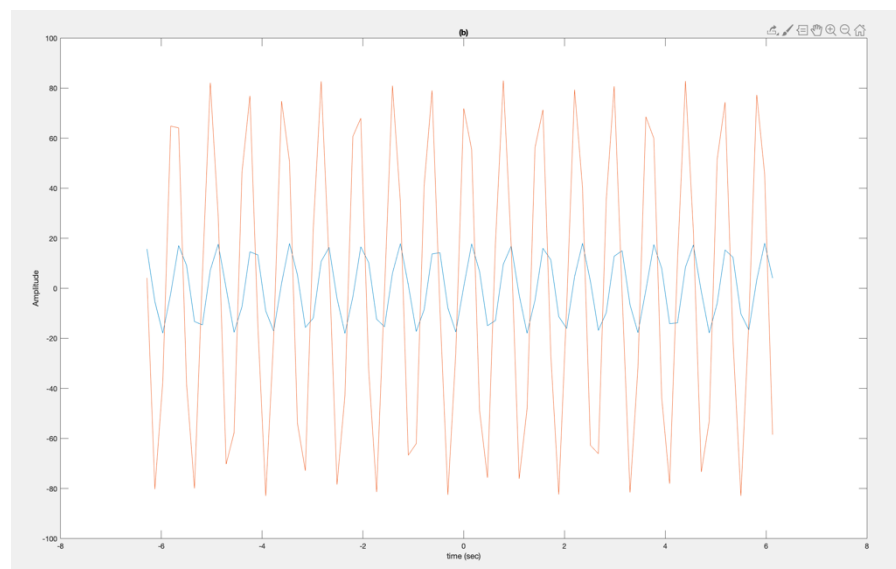
(a)

```
A1=18;  
A2=83;  
j1=88*(pi/180);  
j2=30*(pi/180);  
t=0:pi/100:2*pi;  
x1=A1*cos((2*pi*3882*t)+j1);  
plot(t,x1,'r','linewidth',2);  
hold on;  
x2=A2*cos((2*pi*3882*t)+j2);  
plot(t,x2,'b','linewidth',2);  
hold on;  
title("Plotting a graph");  
xlabel("time");  
ylabel("amp");
```



(b)

```
A1=18;  
A2=83;  
j1=88*(pi/180);  
j2=30*(pi/180);  
t=-2*pi:pi/20:2*pi-pi/20;  
x1=A1*cos(2*pi*3882*t+j1);  
x2=A2*cos(2*pi*3882*t+j2);  
plot(t,x1,t,x2)  
title("(b)")  
xlabel("time (sec)")  
ylabel("Amplitude")
```

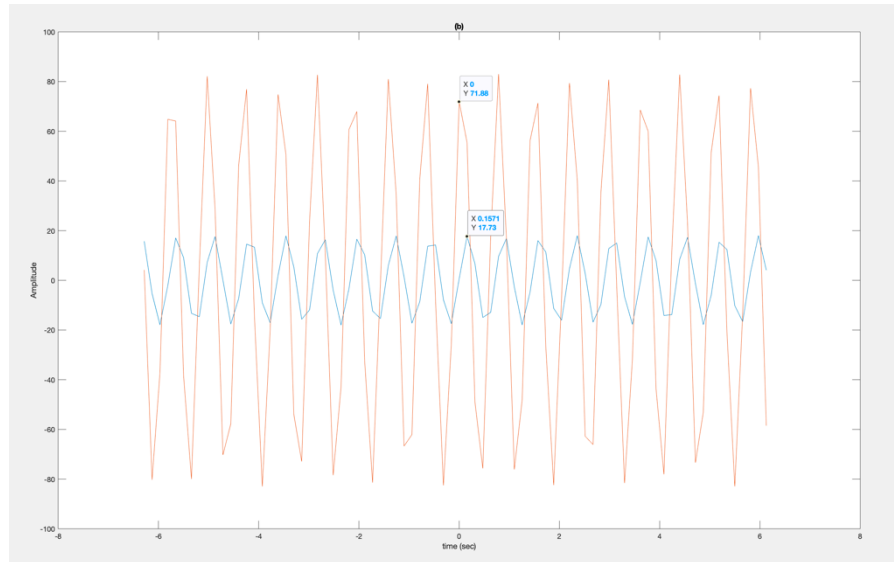


(c)

Here we can see from the graph that $x_1(t)$ reaches its maximum peak after $t=0$ and $x_2(t)$ reaches its maximum peak at $t=0$.

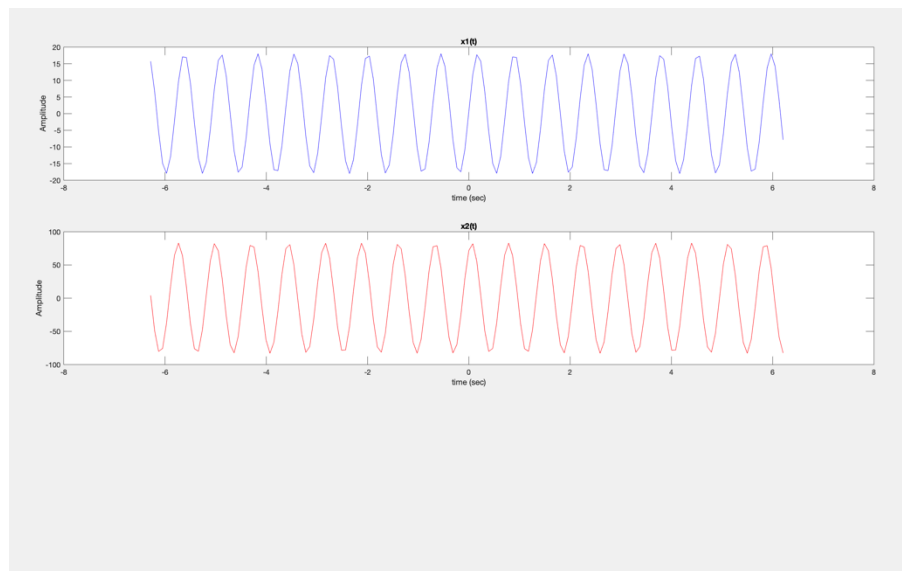
$x_1(t)$ reaches its peak $A_1=72.88$ when $t=0$

$x_2(t)$ reaches its peak $A_2=17.73$ when $t=0.1571$



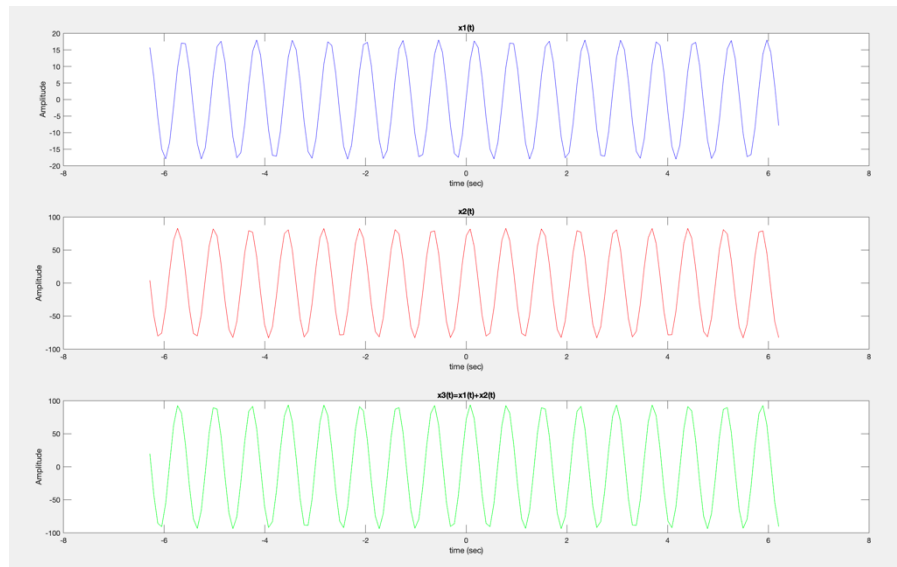
(d)

```
A1=18;
A2=83;
j1=88*(pi/180);
j2=30*(pi/180);
t=-2*pi:pi/40:2*pi-pi/40;
x1=A1*cos(2*pi*3882*t+j1);
x2=A2*cos(2*pi*3882*t+j2);
subplot(3,1,1)
plot(t,x1,'b')
xlabel("time (sec)")
ylabel("Amplitude")
title("x1(t)")
subplot(3,1,2)
plot(t,x2,'r')
xlabel("time (sec)")
ylabel("Amplitude")
title("x2(t)")
```



(e)

```
A1=18;
A2=83;
j1=88*(pi/180);
j2=30*(pi/180);
t=-2*pi*pi/40:2*pi-pi/40;
x1=A1*cos(2*pi*3882*t+j1);
x2=A2*cos(2*pi*3882*t+j2);
x3=x1+x2;
subplot(3,1,1)
plot(t,x1,'b')
xlabel("time (sec)")
ylabel("Amplitude")
title("x1(t)")
subplot(3,1,2)
plot(t,x2,'r')
xlabel("time (sec)")
ylabel("Amplitude")
title("x2(t)")
subplot(3,1,3)
plot(t,x3,'g')
xlabel("time (sec)")
ylabel("Amplitude")
title("x3(t)=x1(t)+x2(t)")
```



(f)

We can see from the graph that magnitude of $x_3(t)$ is 93.79

We can find the magnitude of $x_3(t)$ with the command of `abs(x3)`.

