**Sheet 1**

1. Problem 1.8 in book

Check the solution manual

Problem 1.9 in book change number d) and let it d) can we reconstruct this signal again correctly from the sampled signal using the previously mentioned sampling frequency?

Check the solution manual, for the new d) no we can’t due to the aliasing happened to the second component using the considered sampling frequency.

1. Y(t) = 5 cos (250πt) + 10 sin (80πt) if y(t) is sampled at Fs = 100

find the digital signal y(n).

Can we retrieve back the original signal correctly from y(n) or not ?

Ans: y(n)= 5cos (2.5 π n) + 10 sin (0.8 π n) =5cos (0.5 π n) + 10 sin (0.8 π n)

No, we can’t because aliasing happened to the first component

1. Y(t) = 3 cos (300 πt)

What is the Nyquist frequency?

If the signal is sampled by 100 HZ, find y(n)

If y(n) is converted back to analog what will be the value of analog F, is it the same as original?

Ans:

Nyquist frequency = 300

Y(n) = 3 cos (3π n) = 3 cos (π n)

f = π /2 π = 1/2, Fs = 100, F = 1/2 \* 100 = 50, no it is not the same because of aliasing