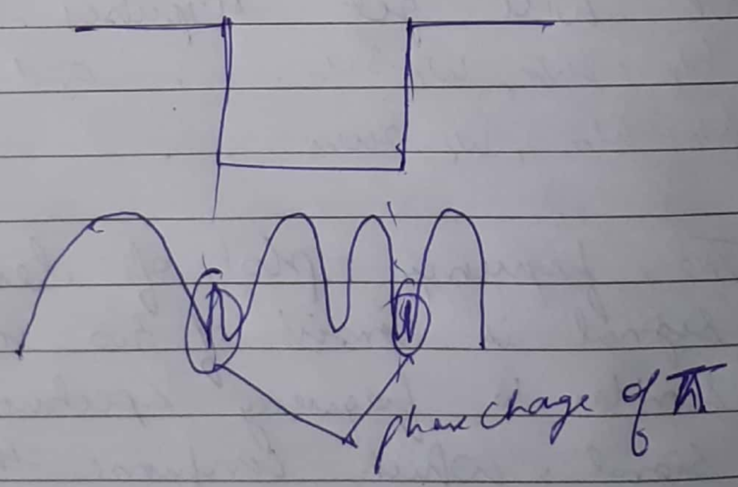
Lab-3

$c(t) = \sin(2\pi f t)$

message signal is ~~uniform~~ an array of bits (1 or 0), where 1 is mapped to +1 and 0 to −1.
After mapping ~~this~~ (in) the information bit is converted to a square wave with amplitude +1 and −1.
For modulation, this square pulse is multiplied with carrier signal.
Wherever ~~then~~ the amplitude of square signal changes from +1 to −1, there is a phase chance of π in the modulated signal.



Then when this modulated signal is passed through channel some noise is added through it. Function 'awgn' in matlab is used for additive white gaussian noise. After this we get a noisy signal.

The demodulation of this noisy signal is done by multiplying it with carrier signal. But the demodulated message signal ~~is~~ also ~~noisy~~ contains noise.

So to find out whether the information bit was 1 or 0 the demodulated signal is decoded

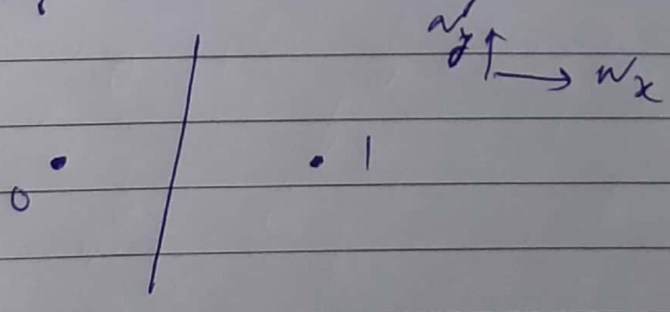
To draw curve for BER VS SNR and to compare it with theoretical value i have followed the following steps:

① generate a random signal $s \in (1,0)^T$

② generate AWGN

③ received signal $(y) = S+N$

④ check whether the received signal is in left side or right side.



⑤ If there is an error increment the error count.

Now ~~compare~~ to compare it with theoretical value which is $\frac{1}{2} \frac{1}{2}\sqrt{\frac{E_b}{N_0}}$

plot it on semilog plot.