```matlab
M = 2;

num_symbol = 1000

data = randi([0 M-1], num_symbol,1);

txSig = pskmod(data,M,pi/M);

scatterplot(txSig)

title('PSK Scatter Plot')

rxSig = awgn(txSig,20);

scatterplot(rxSig)

title('Noisy PSK Scatter Plot')

snr = []

BER_sim = []

ber_theoretical = []

for i = 1:1:50

        snr(i) = i

        EbNo = 10^(i/10);

        rxSig = awgn(txSig, EbNo);

        BER_sim(i) = (biterr(int16(abs(txSig)), int16(abs(rxSig))))/num_symbol;

        ber_theoretical(i) = erfc(sqrt(EbNo*((sin(pi/M))^2)))

end

plot(snr, BER_sim)

plot(snr, ber_theoretical)

legend('BER_sim ', ber_theoretical ')
```