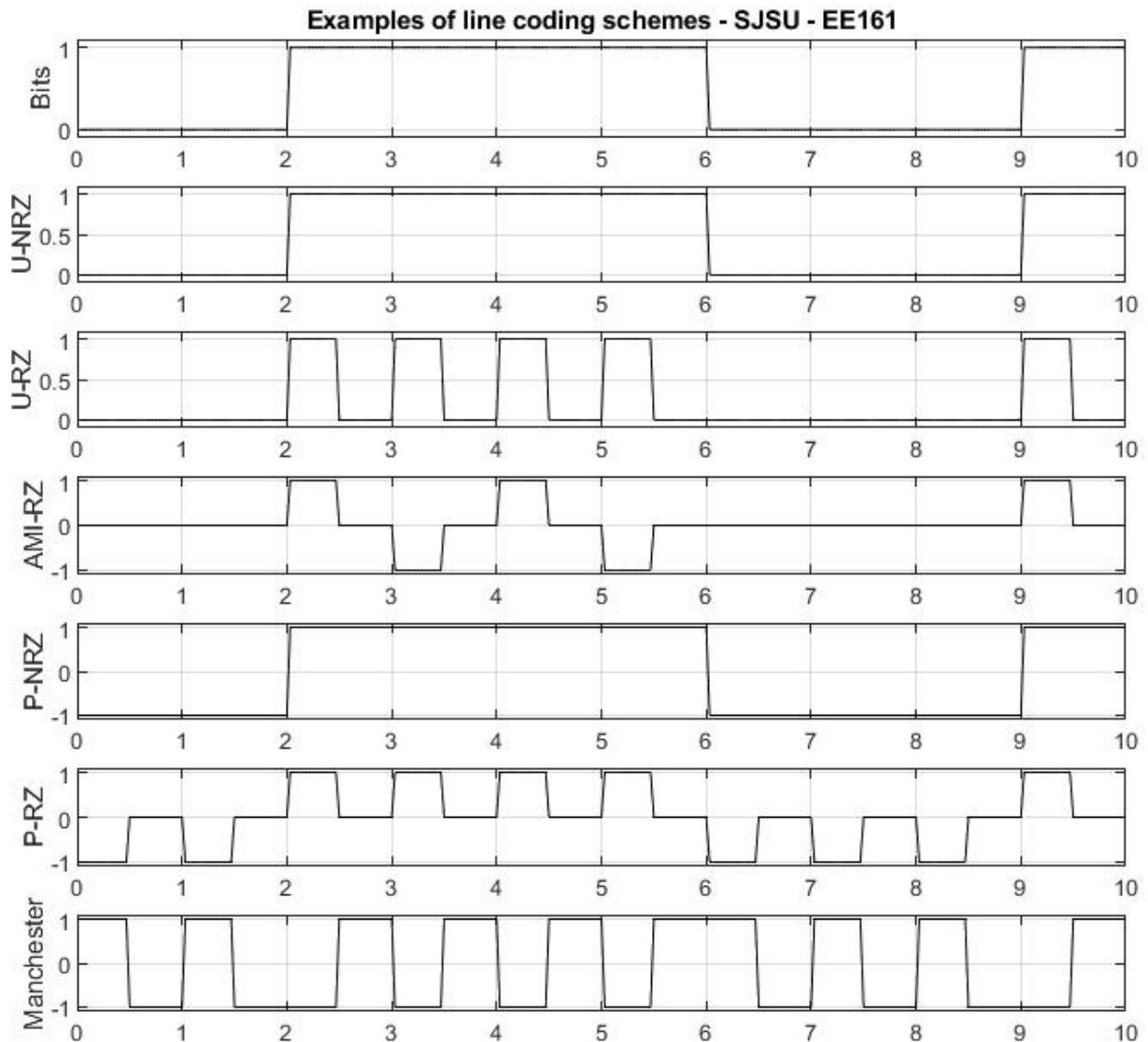


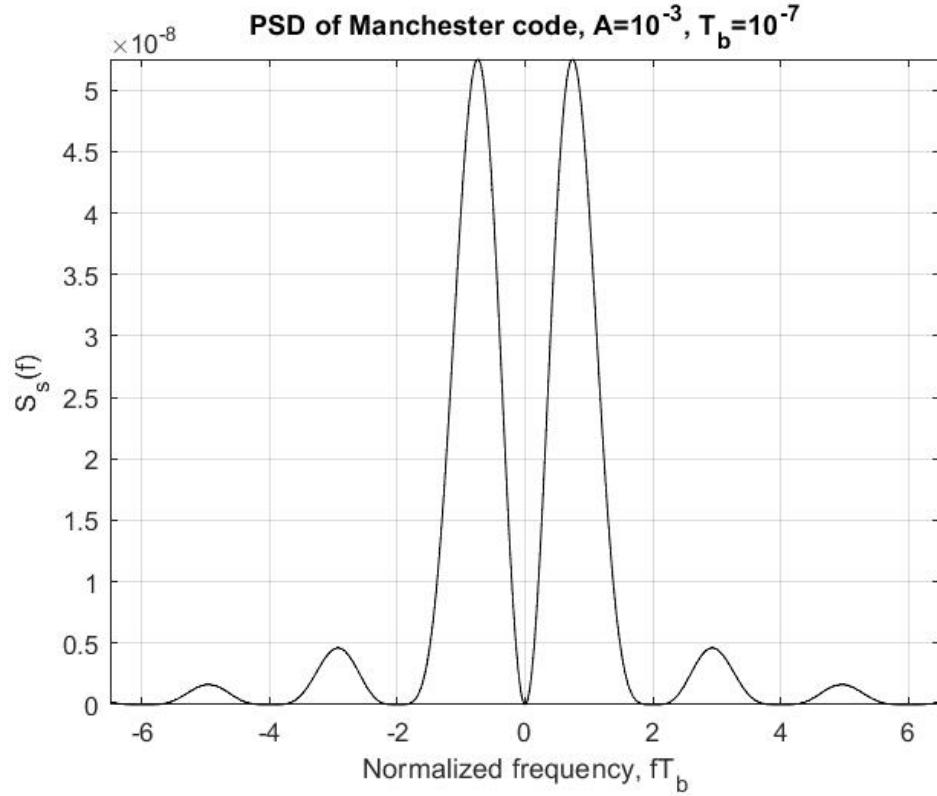
Solution of Homework # 1

1. Pulse shaping

Below is the result of the script with input ID number 123



2. Polar Manchester signaling



3. We have $\mu_X = 2$ and $\sigma_X = \sqrt{3}$:

$$(a) P[X \leq 0] = 1 - P[X > 0] = 1 - Q\left(\frac{0-2}{\sqrt{3}}\right) = Q\left(\frac{2}{\sqrt{3}}\right) = 0.124$$

$$(b) P[X > 3] = Q\left(\frac{3-2}{\sqrt{3}}\right) = Q\left(\frac{1}{\sqrt{3}}\right) = 0.282$$

$$(c) P[0 < X \leq 2] = Q\left(\frac{0-2}{\sqrt{3}}\right) - Q\left(\frac{2-2}{\sqrt{3}}\right) = \frac{1}{2} - Q\left(\frac{2}{\sqrt{3}}\right) = 0.376$$