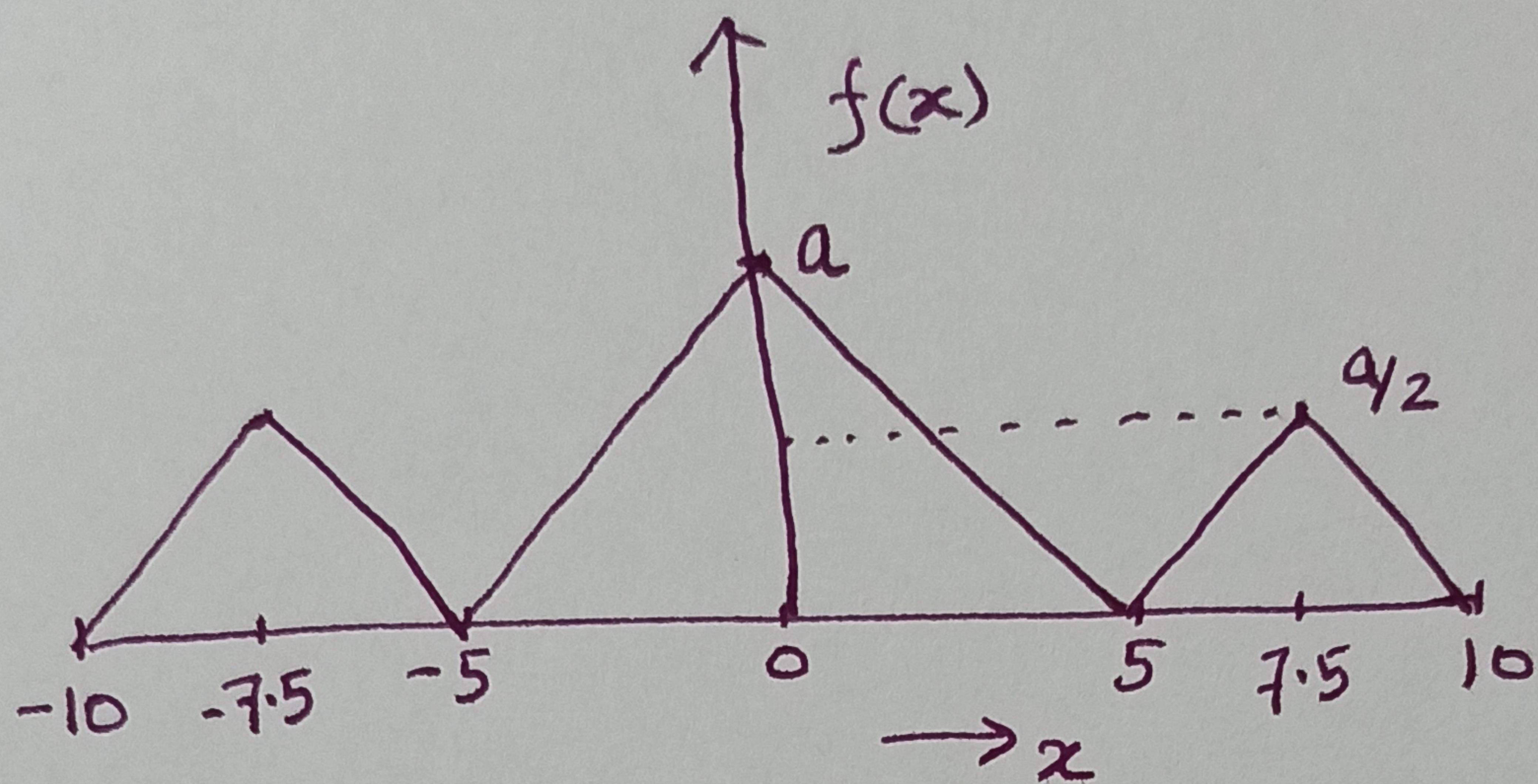


Assignment -1.

Assume the following pdf $f(x)$



1. Compute a .
2. Generate the continuous random variable $X \sim f(x)$ for $N = 10^6$ time points.
3. The discrete time source output is given by
$$Y(k) = X(k) + \frac{1}{2}X(k-1)$$
4. Quantize Y such that $MSE = 10^{-4}$.
5. Compute the entropy rate $H[Y|S]$.
6. Encode Y using fixed length binary encoding.
Compute the average bit rate.
7. Encode Y using Huffman encoding for stationary source. Compute the average bit rate.
8. Encode Y using LZ77 encoding. Compute the average bit rate.