Quiz on 6\textsuperscript{th} Oct.

Name: 
Student Number:

1. The low-pass equivalent representation of a PAM signal is

\[ u(t) = \sum_{n} I_n \ast g(t - nT) \]

Suppose \( g(t) \) is a rectangular pulse with amplitude \( \sqrt{A} \) within the time interval \([0,T]\)

and \( I_n = a_n - a_{n-2} \), where \( \{a_n\} \) is a sequence of uncorrelated binary valued\((0,1)\)

random variables that occur with equal probability.

a) Determine the autocorrelation function of the sequence \( \{I_n\} \)

b) Determine the power density spectrum of \( u(t) \)