ECEn 665
Antennas and Propagation for Wireless Communication

Homework #19
Due March 27, 2023 at the beginning of class (may be turned in after class for half credit)

1. For a $1\,\Omega$ resistor at temperature $T = 290\,\mathrm{K}$ connected through an ideal bandpass filter with bandwidth 1 MHz and center frequency 1 GHz to a $1\,\Omega$ load, find the (a) RMS value of the noise voltage signal at the load, (b) variance of the signal, (c) power spectral density of the signal at the load, (d) autocorrelation function, (e) time average power dissipated in the load, and (f) voltage probability distribution function.

2. Derive an expression for the bit error rate for a slow Rayleigh fading channel.