Homework 2. March 16, 2021

1. Compute the Fourier coefficients for the function $f(t)=t$, ($0 \leq t \leq 1$).
2. What signal-to-noise ratio is needed to put T1 carrier on a 100-kHz line?
3. Radio antenna often work best when the diameter of the antenna is equal to the wavelength of the radio wave. Reasonable antennas range from 1 cm to 5 meters in diameter. What frequency range does this cover?
4. An upper-layer packet is split into 10 frames, each of which has an 80% chance of arriving undamaged. If no error control is done by the data link protocol, how many times must the message be sent on average to get the entire thing through?
5. The following data fragment occurs in the middle of a data stream for which the byte-stuffing algorithm described in class is used: A B ESC FLAG C ESC FLAG FLAG ESC D. What is the output after stuffing?