Econ 7710
Assignment 5

The due date for this assignment is Friday, October 27th.

1. Find characteristic function of a uniformly distributed random variable on [0, 1]
2. **(past midterm problem)** $X_1, X_2, \ldots$ are Bernoulli random variables with parameter $p = \frac{1}{2}$. Using the method of characteristic functions find the distribution of random variable
$$Y = \sum_{k=1}^{\infty} \frac{X_k}{2^k}.$$
3. **(past midterm problem)** Under which conditions imposed on random variable X, random variables X and $\sin(X)$ are independent?