Cryptography: Homework 3

(Deadline: 11:59am, 2019/10/16)

1. (20 points) Let $f(n), g(n)$ be negligible functions and let $p(n)$ be a polynomial function. Show that $f(n) + g(n)$ and $p(n)f(n)$ are negligible functions.

2. (20 points) Let S be a sample space. Let $X : S \to R$ and $Y : S \to R$ be two random variables that take values in the set R. Let $f : R \to T$ be a function from the set R to the set T. Then $f(X) : S \to T$ and $f(Y) : S \to T$ are random variables that take values in the set T. Suppose that none of the sets S, R and T is empty. Show that $\mathrm{SD}(f(X), f(Y)) \leq \mathrm{SD}(X, Y)$.