CS 5291: Stochastic Processes for Networking

HW1

1. X is an exponentially distributed random variable with parameter λ. $Y = X^2$. Find the mathematical expectation of Y.

2. Suppose X is a non-negative and continuous random variable whose pdf is $f_X(x)$ and whose cdf is $F_X(x)$. Starting from the definition of the mathematical expectation, prove that $E[X] = \int_0^\infty \big(1 - F_X(x)\big)dx$.