Let  an application defined for all , by:



Where  and 

1. Determine k as a function of such that  is the probability density function of a random variable X.
2. What is the distribution function of X?
3. If we defined . What is the distribution of ?
4. Calculate E(X) and V(X)
5. Evaluate P (| Y | ≥ 2). Compare with P (| U | ≥ 2) where successively follows a distribution N (0, 1), a distribution of Student at 20 degrees of freedom, a Cauchy distribution of density  , a double exponential distribution of density 