Problems from Assignment 13

1. Suppose that $X \sim t_1$ (a $t$-distribution with 1 degree of freedom is often called a Cauchy Distribution).

    (a) Write $f_X(x)$ in its simplest form.

    (b) Find $P(-2 \leq X \leq 3)$ without using a table.

    (c) What is $E(X)$.

    (d) Prove $\text{Var}(X) = \infty$.

2. Suppose that $X \sim F_{1,1}$.

    (a) Write $f_X(x)$ in its simplest form.

    (b) Find $P(1 \leq X \leq 2)$ without using a table.

    (c) What is $E(X)$?