**Total area**

**Mean and variance**

**r-th moments about origin**

**Moment generating function**

**Cumulant generating function**

**Characteristic function**

**Question:** If X has distribution with n degrees of freedom then show that

This is the moment generating function of a chi-square variable with degrees of freedom.

**Question:** Show that distribution tends to normal distribution as n becomes large using (i) central limit distribution (ii) with out using central limit theorem.