1) Suppose Y is the number of gypsy moths caught in a trap for the moth. Assume that Y is from a highly skewed distribution with mean  $\mu=0.5$  and standard deviation  $\sigma=0.7$ . Assume that the sample mean  $\overline{Y}$  is computed from a sample of size n=16 traps. Find  $P(\overline{Y}\geq 0.6)$ , if possible.

not possible

2) Suppose Y is the number of gypsy moths caught in a trap for the moth. Assume that Y is from an approximately normal distribution with mean  $\mu = 0.5$  and standard deviation  $\sigma = 0.7$ . Assume that the sample mean  $\overline{Y}$  is computed from a sample of size n = 16 traps. Find  $P(\overline{Y} > 0.6)$ , if possible.

n = 16 traps. Find  $P(\overline{Y} \ge 0.6)$ , if possible.

(4509) = 6 (5000) = 1-1 (510,00) = 1-0.7157 = (0.2843

3) Hurricanes occur at a Poisson rate of 0.25 per week during hurricane season which lasts 15 weeks. Find the probability of four hurricanes in the upcoming hurricane season.

W- Passon (4= 2t = 025 (5) = (5 = 3.75)

P(W=H) = P(H) = = MH.

(14)= E (3.75)4 (0.1938)

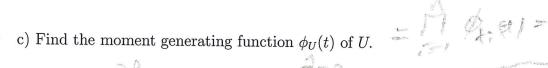
4) Suppose that  $X_1, ..., X_n$  are independent random variables where  $E(X_i) = 4p$ ,  $V(X_i) = 8p$  and the moment generating function of  $X_i$  is  $\phi_{X_i}(t) = (1-2t)^{-2p}$  for t < 0.5.

VU/2 3 = 10

Let  $U = \sum_{i=1}^{n} X_i$ .

a) Find E(U).

b) Find the variance V(U) of U. =  $\frac{1}{2}$ ,  $V(K) = \frac{1}{2}$ ,  $QP = \frac{1}{2}$ 



5) Let X be a random variable from a distribution with pdf

$$f(x) = \frac{\theta}{x^2} \exp\left(\frac{-\theta}{x}\right)$$

where x > 0 and  $\theta > 0$ . Let  $Y = \frac{1}{X}$  and find the pdf of Y using the method of transformations. Do not forget to include the support of Y.