Revision 5

1. If the distribution function of a random variable is given by

$$F(x) = \begin{cases} 1 - \frac{1}{x^2} & \text{for } x \geq 1 \\ 0 & \text{for } x \leq 1 \end{cases}$$

find the probabilities that this random variable will take on a value.

(i) less than 3 (ii) between 4 and 5 (Dec 2018)

2. If X is a uniformly distributed RV with mean 1 and variance $4/3$, find $P(|X-2|<2)$ (Apr. 2018)

3. The time in hours required to repair a machine is exponentially distributed with mean 20. What is the probability that the required time is

(i) Exceeds 30 hrs (ii) Between 16 hrs & 24 hrs. (Apr 2018)

4. Prove that Binomial distribution with parameters n and p can be approximated to Poisson distribution when n is large & p is small. with $np = \lambda$ a constant (May 2017)

5. Derive mean and variance of uniform distribution (Dec 2018)