**POISSON PROCESS**

**Q: Suppose the customers enter a certain shop at the rate of 30 persons an hour. Using the Poisson distribution, calculate the probability that in a 2-minutes interval, no customer will enter the shop.**

**SOLUTION:**

**DATA**

Rate = λ = 30 persons per 1 hour

Probability no customer enter = P (X = 0) = ?

Time Interval = t = 2 minutes = 2/60 = 1/30 per hour

**FORMULA:**

**Q: The number of customers arriving at a grocery store can be modeled by a Poisson process with intensity λ= 10 customer per hour.**

**a). Find the probability that there are 2 customers between 10:00 and 10:20.**

**b). Find the probability that there are 3 customers between 10:00 and 10:20.**

**SOLUTION: (a)**

**DATA**

Rate = λ = 10 persons per 1 hour

Probability no customer enter = P (X = 2) = ?

Time Interval = t = 20 minutes = 20/60 = 1/3 per hour

**FORMULA:**

**SOLUTION: (b)**

**DATA**

Rate = λ = 10 persons per 1 hour

Probability no customer enter = P (X = 3) = ?

Time Interval = t = 20 minutes = 20/60 = 1/3 per hour

**FORMULA:**

**Q: A customer service firm receives an average of three calls per hour on its toll-free number. For any given hour, find the probability that at least three calls.**

**SOLUTION:**

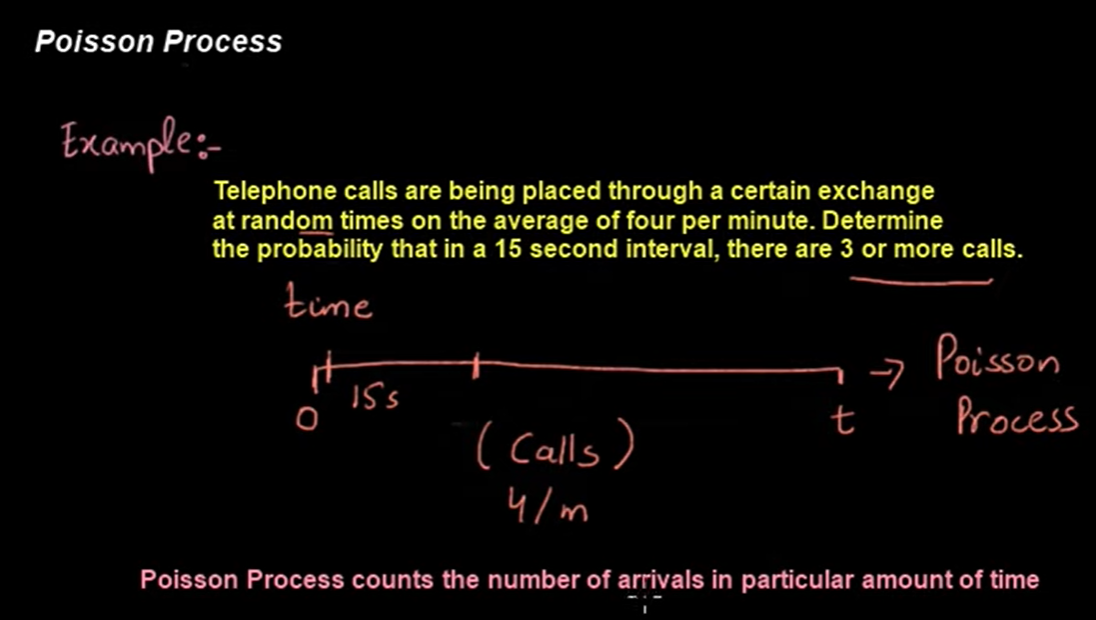
**DATA**

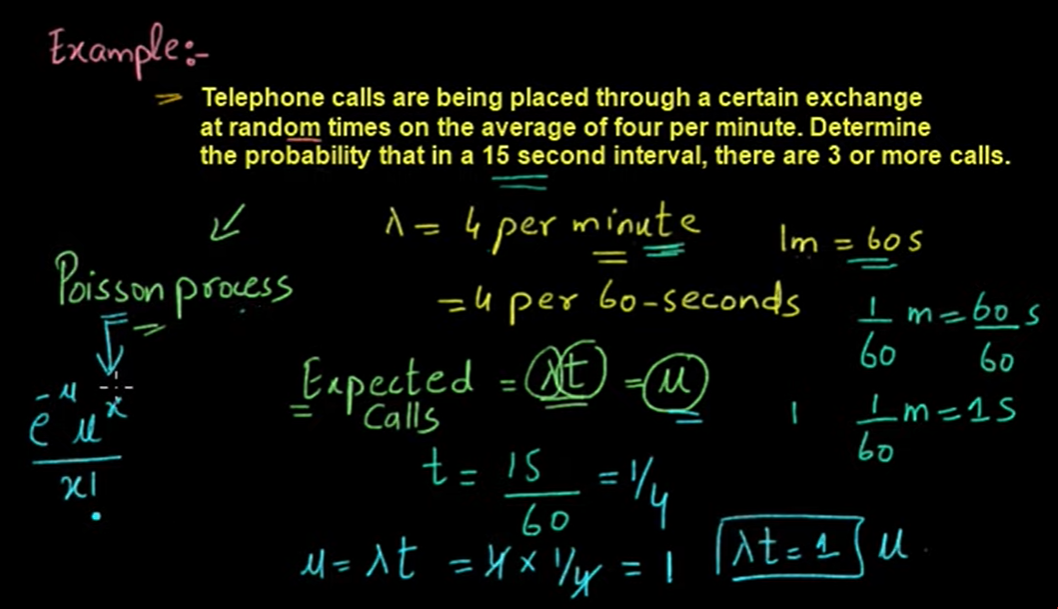
Rate = λ = 3 calls per 1 hour

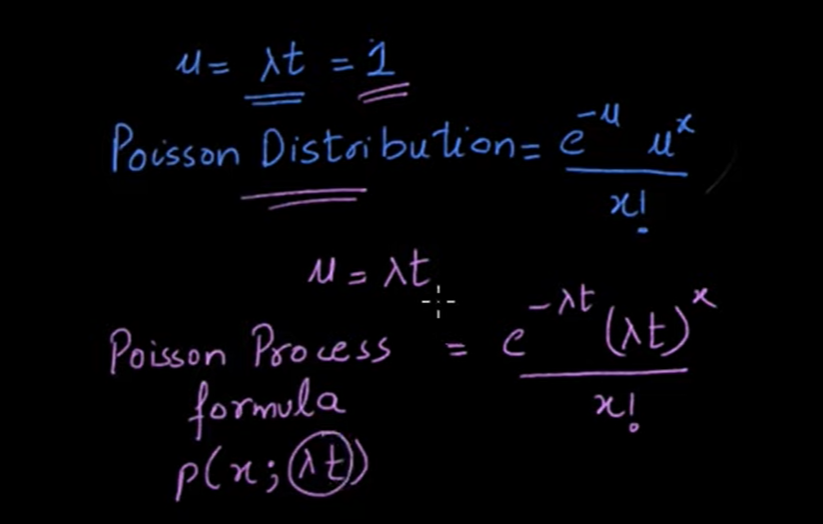
Probability at least three calls = P (X 3) = ?

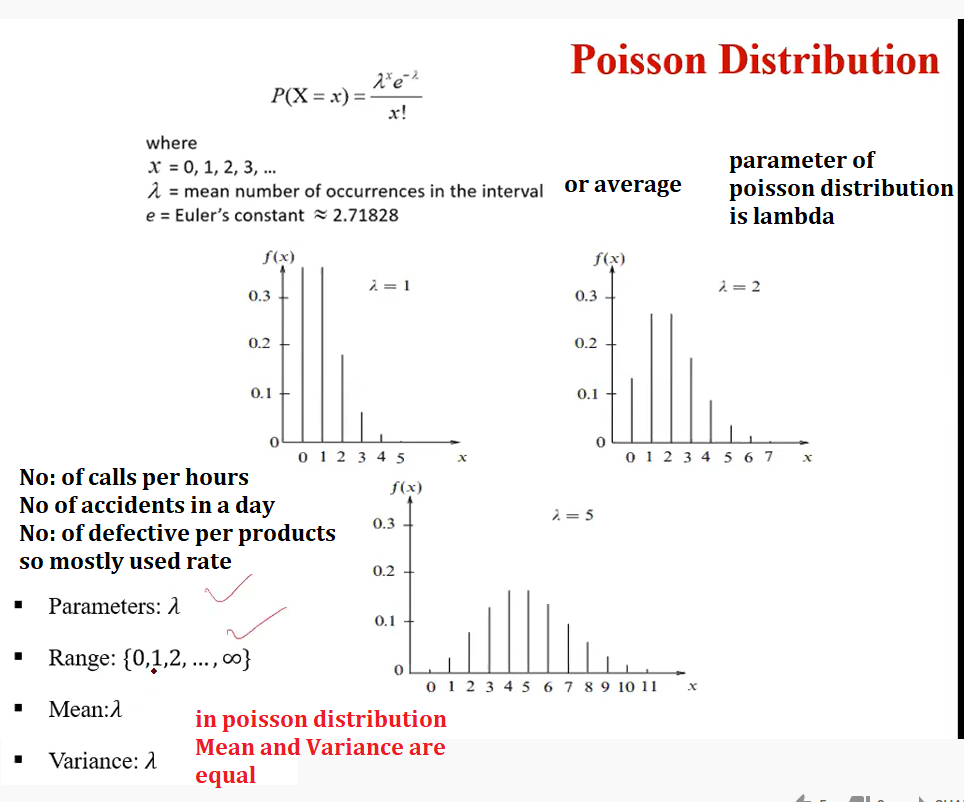
Time Interval = t = 1hour

**FORMULA:**





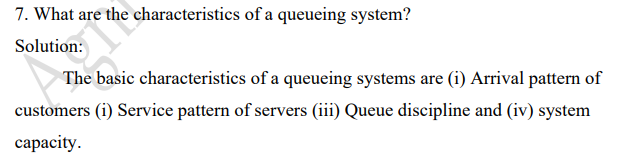


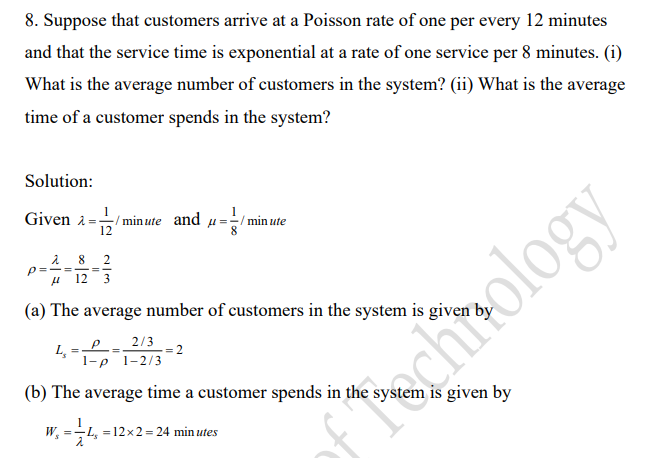


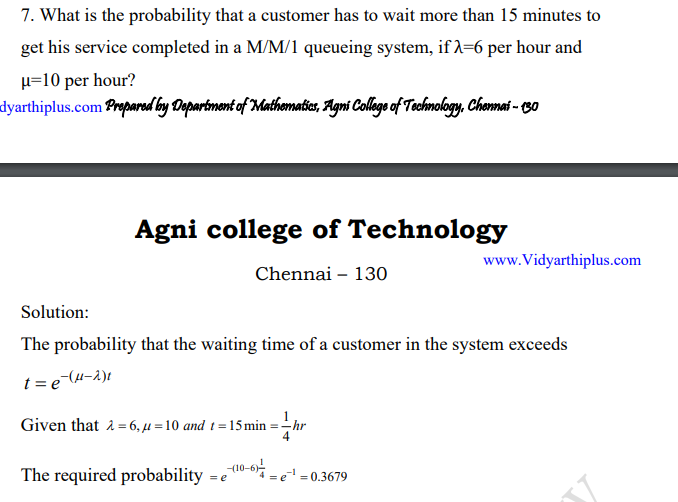
Q: Define Markov Process

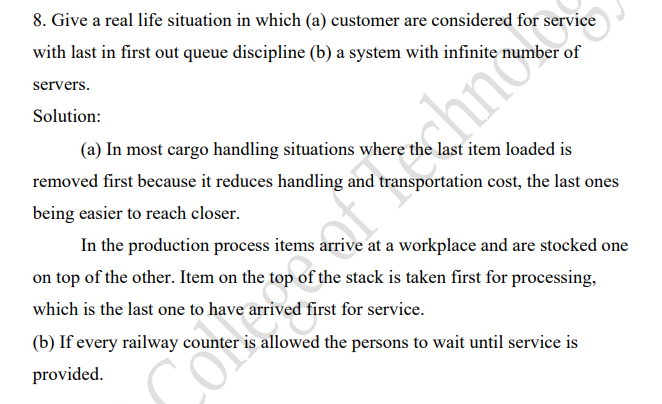
Q: What do you mean by Balking, Reneging of a queuing system?

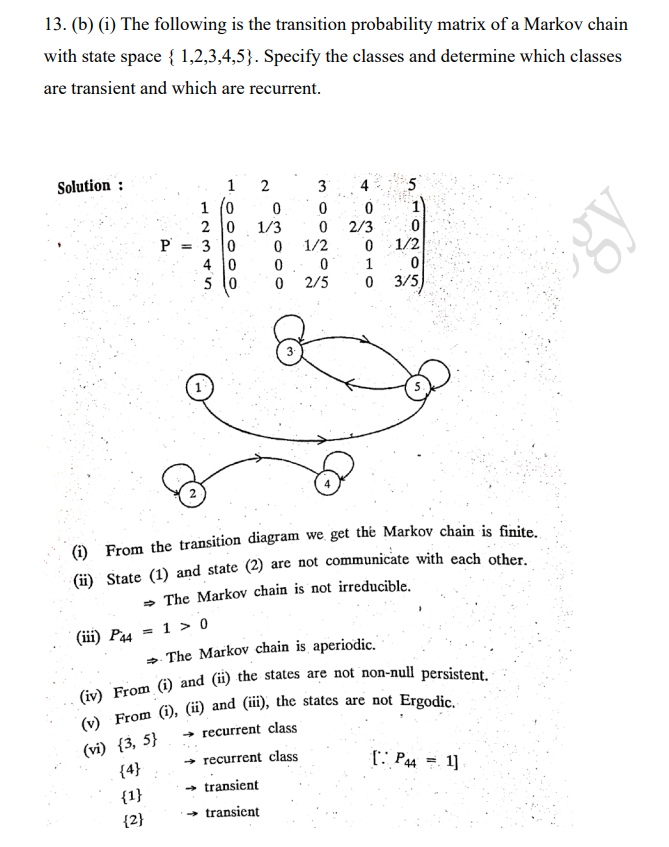
Q: State Little’s formula for the Queueing model (M/M/1): (K/FIFO)

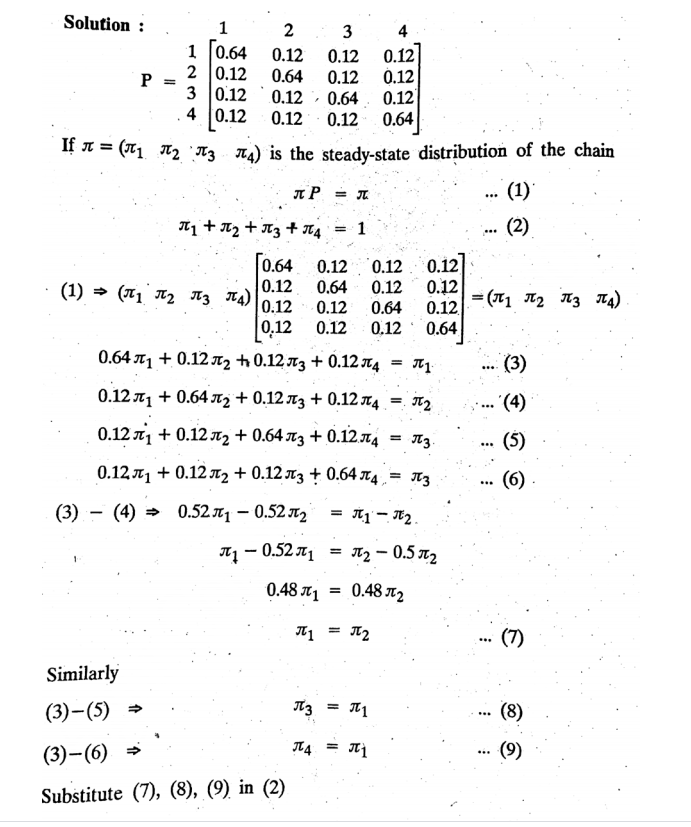












Q:

SOLUTION:

Subtract (A) – (B)

Similarly, subtract (A) – (C)

Similarly, subtract (A) – (D)

Put the value of (A), (B), (C) and (E) in equation (2)