Poisson Distribution:

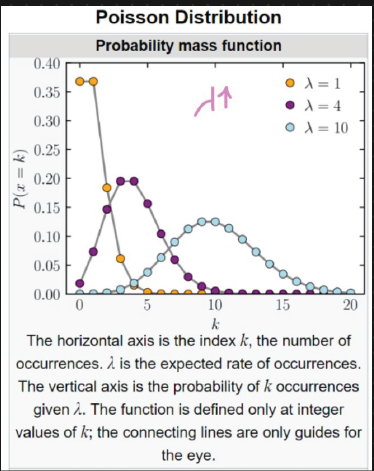
Definition: In probability theory and statistics, the Poisson distribution is a discrete probability distribution that expresses the probability of a given number of events occurring in a fixed interval of time if these events occur with a known constant mean rate and independently of time since the last event.

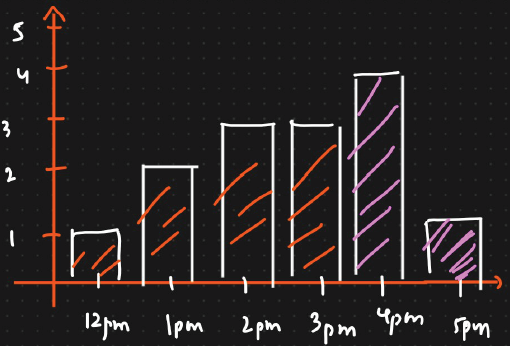
Probability mass function is used.

Describes the number of events occurring in fixed time intervals.

Example: No. of people visiting train station every hour.

Example: No. of people visiting bank every hour.





λ = 3 = Expected no. of events occurring at a time at every time interval

PMF:

Q: What is the probability of a person visiting the 5th hour?

P(X) =

Considering λ = 3

P(X=5) = = 0.1

Q: What is the probability of a person visiting the 4th and 5th hour?

P(X) =

Considering λ = 3

P(X=4) + P(X=5) = + = 0.1008 + 0.1681 = **0.2689**

Q: What is the probability of a person visiting in or before 3rd hour?

P(X) =

Considering λ = 3

P(X=12) + P(X=1) + P(X=2) + P(X=3) = = + = **0.0498**

Mean of Poisson Distribution:

Mean = E(x) = μ = λ \* t = Variance

λ = Expected number of events occurring at every time interval

t = Time interval