1. What is the main difference between a Probability Mass Function (PMF) and a Probability Density Function (PDF)? a) PMF is for continuous distributions, while PDF is for discrete distributions. b) PMF represents probabilities for continuous random variables, while PDF represents probabilities for discrete random variables. c) PMF represents probabilities for discrete random variables, while PDF represents probabilities for continuous random variables. d) PMF and PDF are terms used interchangeably to represent the same concept.

Answer: c) PMF represents probabilities for discrete random variables, while PDF represents probabilities for continuous random variables.

Explanation: A PMF is used to describe the probability distribution of a discrete random variable, while a PDF is used for continuous random variables. PMFs assign probabilities to individual outcomes, while PDFs give the probability density over intervals for continuous variables.

2. Which of the following distributions is suitable for modeling the number of successes in a fixed number of independent Bernoulli trials? a) Normal Distribution b) Exponential Distribution c) Poisson Distribution d) Binomial Distribution

Answer: d) Binomial Distribution

Explanation: The binomial distribution is used to model the number of successes in a fixed number of independent Bernoulli trials.

3. What is the characteristic shape of a Poisson distribution? a) Bell-shaped curve b) Skewed to the left c) Skewed to the right d) Asymptotic curve

Answer: d) Asymptotic curve

Explanation: The Poisson distribution has an asymptotic shape, meaning it approaches zero as the number of events becomes large.

4. Which distribution is commonly used to model the waiting time between independent events occurring at a constant rate? a) Binomial Distribution b) Normal Distribution c) Poisson Distribution d) Exponential Distribution

Answer: d) Exponential Distribution

Explanation: The exponential distribution is often used to model the waiting time between independent events occurring at a constant rate.

5. In a normal distribution, what percentage of data falls within one standard deviation from the mean? a) 68.2% b) 95.4% c) 99.7% d) 99%

Answer: a) 68.2%

Explanation: In a normal distribution, approximately 68.2% of the data falls within one standard deviation from the mean, according to the empirical rule (also known as the 68-95-99.7 rule).

6. Which distribution is characterized by a bell-shaped curve? a) Exponential Distribution b) Normal Distribution c) Poisson Distribution d) Binomial Distribution

Answer: b) Normal Distribution

Explanation: The normal distribution is characterized by a bell-shaped curve.

7. Which distribution is often used to model rare events occurring over a fixed interval of time or space? a) Exponential Distribution b) Binomial Distribution c) Normal Distribution d) Poisson Distribution

Answer: d) Poisson Distribution

Explanation: The Poisson distribution is often used to model rare events occurring over a fixed interval of time or space.

8. Which distribution is symmetric and unbounded on both ends? a) Exponential Distribution b) Normal Distribution c) Poisson Distribution d) Binomial Distribution

Answer: b) Normal Distribution

Explanation: The normal distribution is symmetric and unbounded on both ends.

9. What is the area under the probability density function of a continuous distribution equal to? a) Probability b) Cumulative distribution function c) Mean d) Variance

Answer: a) Probability

Explanation: In a continuous distribution, the area under the probability density function represents the probability of an event occurring within a certain range of values.

10. Which distribution is commonly used to model the time until the next event occurs in a sequence of independent events? a) Normal Distribution b) Exponential Distribution c) Binomial Distribution d) Poisson Distribution

Answer: b) Exponential Distribution

Explanation: The exponential distribution is commonly used to model the time until the next event occurs in a sequence of independent events, such as waiting times between arrivals in a Poisson process.

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