Continous probability distributions

Namn:

Till många av flervalsfrågorna kan mer än ett svar vara möjligt. Du förväntas ge det i sammanhanget bästa möjliga svaret.

För att en dugga skall bli godkänd måste du ha minst 3 godkända på teoridelen **och** minst 3 godkända på problemdelen.

Hjälpmedel: Eget formelblad om högst en A4 sida skrivet med hjälp av Scientific NoteBook.

Du har möjlighet att redovisa en dugga på ett avsnitt endast en gång.

Teorifrågor

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1 Picture a relative frequency histogram that measures, on the horizontal axis, various (equal–sizes) lifetime ranges of appliance. The height of any histogram column then represents

- ○ the probability that any randomly chosen unit of this appliance has a lifetime within the range that constitutes the base of the column
- ○ the relative frequency density
- ○ the proportion of all appliance units the lifetime of which falls within the range that constitutes the base of the column
- ◉ all of the above

2 The normal probability distribution function is characterized by

- ○ an equality of the mean, median and mode
- ○ a positive probability of finding a value of the random variable within any given range from minus infinity to plus infinity
- ○ tails extending indefinitely in both directions from the center
- ◉ all of the above

3 The normal distribution is a continous probability distribution

- ○ therefore, it cannot be used to approximate discrete probability distributions
- ○ however, when $\mu \geq 20$, it becomes a discrete probability distributions
- ◉ nevertheless, it can be used to approximate certain discrete probability distributions, such as the binomial, hypergeometric or Poisson distributions.
- ○ all the above statements about it are pure nonsense

4 Any regular probability distribution (that shows probabilities for individual values of a random variable) can easily be converted into

- ◉ a cumulative probability distribution
- ○ a binomial probability distribution
- ○ a hypergeometric probability distribution
- ○ none of the above

5 According to a common rule of thumb, a normal probability distribution can nicely approximate a Poisson distribution whenever the value of μ in the Poisson distribution

- ◉ exceeds 20
- ○ is smaller than 10
- ○ equals 10
- ○ exceeds 5

Problem

6 The time required by a bank teller to cash a check has a mean of 50.0 seconds and a standard deviation of 6.0 seconds. Find the times representing the 60:th percentile under the assumption of normally distributed variables. Answer with 2 decimals.

51.52

7 A study of 52 253 coal miners shows that the daily output per worker equals 17. 3 tons on the average. Some 83.0 percent produce 18. 1 tons or fewer. What percentage produces more than 17. 2 tons? Assume normal probability distribution. Answer with no decimals.

55

8 The absentee rate in a class of 96 statistics students is 8 percent. With the help of an appropriate approximation, compute the probability that in the next class between 88 and 90 will attend. (Use approximation with correction) 0.415

9 The arrival of a bus is equally likely at between 25 and 47 minutes from now. Determine your expected waiting time. Answer with 1 decimal.

36.0

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