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Begonnen am Dienstag, 21. Februar 2023, 22:08**Status** Beendet**Beendet am** Dienstag, 21. Februar 2023, 22:32**Verbrauchte Zeit** 23 Minuten 54 Sekunden**Bewertung** 8 von 10 (80%)**Feedback** Congratulations! You have successfully passed the test!**Frage 1**

Vollständig

Erreichte
Punkte 0 von 1

An inspection procedure at a manufacturing plant involves picking four items at random and accepting the whole lot if at least three of the four items are in perfect condition. If in reality 90% of the whole lot are perfect, what is the probability that the lot will be accepted?

- ☐ a. $4 \cdot 0.9^3 \cdot 0.1$
- ☐ b. $4 \cdot 0.1^3 \cdot 0.9 + 0.1^4$
- ☒ c. $1 - 0.9^4$
- ☐ d. $4 \cdot 0.9^3 \cdot 0.1 + 0.9^4$

Frage 2

Vollständig

Erreichte
Punkte 1 von 1

In a list of 15 households, 9 own homes and 6 do not own homes. Four households are randomly selected from these 15 households. Find the probability that the number of households in these four who own homes is at most one.

- ☐ a. 0.3456
- ☐ b. 0.1536
- ☒ c. 0.1792
- ☐ d. 0.4752

Frage 3

Vollständig

Erreichte
Punkte 1 von 1

Let X be the number of heads obtained in 50 independent tosses of a fair coin. Then X is a

- ☒ a. binomial random variable $B(50, 0.5)$
- ☐ b. binomial random variable with parameters $B(25, 0.5)$
- ☐ c. geometric random variable $Geom(0.5)$
- ☐ d. Poisson random variable $Poi(25)$

Frage 4

Vollständig

Erreichte
Punkte 1 von 1

Whenever the probability is proportional to the length of the interval, the random variable is

- ☐ a. binomially distributed
- ☒ b. uniformly distributed
- ☐ c. normally distributed
- ☐ d. exponentially distributed

Frage 5

Vollständig

Erreichte
Punkte 1 von 1

Three (fair) coins are flipped. Which R-command approximates expected number of 'successes' (e.g., heads)?

- ☐ a. $\text{sum}(\text{rbinom}(1000, 1, 1/2) + \text{rbinom}(1000, 1, 1/2) + \text{rbinom}(1000, 1, 1/2))/3000$
- ☒ b. $\text{sum}(\text{rbinom}(1000, 3, 1/2))/1000$
- ☐ c. $\text{sum}(\text{rbinom}(1000, 3, 1/2) + \text{rbinom}(1000, 3, 1/2) + \text{rbinom}(1000, 3, 1/2))/1000$
- ☐ d. $\text{sum}(\text{rbinom}(1000, 3, 1/2))/3000$

Frage 6

Vollständig

Erreichte
Punkte 1 von 1

Let X be a random variable with a Poisson distribution. If it holds $P(X = 1) = P(X = 3)$, then the expectation $\mathbb{E}X$ equals

- ☐ a. $\sqrt{3}$
- ☒ b. $\sqrt{6}$
- ☐ c. 6
- ☐ d. 3

Frage 7

Vollständig

Erreichte
Punkte 1 von 1

Anna throws 25 identical balls into 12 urns at random, where each urn is equally likely and each throw is independent of any other throw. What is the probability that the tenth urn is empty?

- ☐ a. $(\frac{24}{25})^{12}$
- ☐ b. $(\frac{25}{12})(\frac{24}{25})^{12}$
- ☐ c. $(\frac{25}{12})(\frac{1}{12})^{25}$
- ☒ d. $(\frac{11}{12})^{25}$

Frage 8

Vollständig

Erreichte
Punkte 1 von 1

Suppose that the arrival time for the next bus at a bus stop is uniformly distributed between 1 and 25 minutes. The probability that the bus will arrive within the next 5 minutes is

- ☐ a. $\frac{1}{4}$
- ☒ b. $\frac{1}{6}$
- ☐ c. $\frac{4}{25}$
- ☐ d. $\frac{1}{5}$

Frage 9

Vollständig

Erreichte
Punkte 1 von 1

Experiments with repeated independent trials will be described by the binomial distribution if

- ☐ a. the trials are continuous
- ☐ b. each trial result influences the next.
- ☐ c. the time between trials is constant.
- ☒ d. each trial has exactly two outcomes whose probabilities do not change.

Frage 10

Vollständig

Erreichte
Punkte 0 von 1

What is the range of a geometric random variable?

- ☒ a. All positive integers
- ☐ b. All integers
- ☐ c. All negative integers
- ☐ d. All non-negative integers

[◀ Test 3 - Random variables and distributions](#)

Direkt zu:

[Test 4.2 - Common families of distributions 2 ▶](#)