

[Zur LVA in TISS](#)
[Dashboard](#) / [Meine Kurse](#) / [107.254-2022W](#) / [Tests](#) / [Test 4.2 - Common families of distributions 2](#)
Begonnen am Samstag, 25. Februar 2023, 20:44**Status** Beendet**Beendet am** Samstag, 25. Februar 2023, 20:54**Verbrauchte Zeit** 10 Minuten 49 Sekunden**Bewertung** 10 von 10 (100%)**Feedback** Congratulations! You have successfully passed the test!**Frage 1**

Vollständig

Erreichte
Punkte 1 von 1Which of the following R-commands should be used for approximating the interquartile range of a random variable $X \sim \mathcal{N}(3, 4)$?

- ☐ a. `diff(rnorm(c(0.25, 0.75), 3, 4))`
- ☒ b. `diff(qnorm(c(0.25, 0.75), 3, 2))`
- ☐ c. `diff(qnorm(c(0.25, 0.75), 3, 4))`
- ☐ d. `diff(pnorm(c(0.25, 0.75), 3, 2))`

Frage 2

Vollständig

Erreichte
Punkte 1 von 1

Suppose using accelerometers in helmets, researchers determine that boys playing high school football absorb an average of 355 hits to the head with a standard deviation of 80 hits during a season (including both practices and games). What is the probability on a randomly selected team of 48 players that the average number of head hits per player is between 340 and 360?

- ☐ a. 0.236
- ☒ b. 0.571
- ☐ c. 0.614
- ☐ d. 0.429

Frage 3

Vollständig

Erreichte
Punkte 1 von 1Let X be normally distributed $\mathcal{N}(12, 4)$ and let Z be the standard normal distribution. Then $P(X \leq 9)$ equals

- ☐ a. $P(Z \leq 1.5)$
- ☐ b. $P(Z \geq 0.25)$
- ☐ c. $P(Z \leq -0.75)$
- ☒ d. $P(Z \geq 1.5)$

Frage 4

Vollständig

Erreichte
Punkte 1 von 1

Let X and Y be two independent standard normal random variables. Let $S = \min\{X, Y\}$. Find the probability that $S \geq 1$ in terms of the cumulative distribution function Φ of a standard normal random variable.

- ☒ a. $(1 - \Phi(1))^2$
- ☐ b. $\Phi(1)^2$
- ☐ c. $1 - \Phi(1)^2$
- ☐ d. $(1 - \Phi(1)) \cdot \Phi(1)$

Frage 5

Vollständig

Erreichte
Punkte 1 von 1Which one of the following is a **true** statement?

- ☐ a. All bell-shaped curves are normal distributions for some choice of μ and σ .
- ☒ b. The area under a normal curve is always equal to 1, no matter what the mean and standard deviation are.
- ☐ c. Depending upon the value of the standard deviation, normal curves with different means may be centred around the same number.
- ☐ d. The smaller the standard deviation of a normal curve, the lower and more spread out the graph.

Frage 6

Vollständig

Erreichte
Punkte 1 von 1

Assume the given distributions are normal. Cucumbers grown on a certain farm have weights with a standard deviation of 2 ounces. What is the mean weight if 85% of the cucumbers weigh less than 16 ounces?

- ☐ a. 14.88
- ☐ b. 14.30
- ☐ c. 15.70
- ☒ d. 13.92

Frage 7

Vollständig

Erreichte
Punkte 1 von 1

A probability distribution showing the probability of 10 successes in 65 trials, where the probability of success does not change from trial to trial, is called a

- ☐ a. Poisson probability distribution
- ☐ b. normal probability distribution
- ☐ c. uniform probability distribution
- ☒ d. binomial probability distribution

Frage 8

Vollständig

Erreichte
Punkte 1 von 1

Let $X \sim \mathcal{N}(1, 1)$ and $Y \sim \mathcal{N}(-1, 2)$ be two independent random variables. Then the distribution of their linear combination $3X - 2Y + 5$ is

- ☐ a. $\mathcal{N}(5, 5)$
- ☐ b. $\mathcal{N}(10, 22)$
- ☒ c. none of the rest
- ☐ d. $\mathcal{N}(10, 5)$

Frage 9

Vollständig

Erreichte
Punkte 1 von 1

Assume the given distributions are normal. The average score on a college placement exam is 500 with a standard deviation of 100. Ninety-five percent of the test takers score approximately above what score?

The following table for z_{α} -values is useful. Here, z_{α} denotes the number that satisfies $P(z \leq z_{\alpha}) = \alpha$, for $\alpha \in [0, 1]$.

z_{α}	$z_{0.05}$	$z_{0.25}$	$z_{0.50}$	$z_{0.75}$	$z_{0.90}$	$z_{0.95}$	$z_{0.975}$	$z_{0.99}$	$z_{0.995}$
	-1.645	-0.674	0.000	0.674	1.282	1.645	1.960	2.326	2.575

Table: z_{α} -values

- ☐ a. 484
- ☐ b. 405
- ☐ c. 664
- ☒ d. 336

Frage 10

Vollständig

Erreichte
Punkte 1 von 1

Given that 10% of the nails made using a certain manufacturing process have a length less than 2.48 inches, while 5% have a length greater than 2.54 inches, what is the mean of the lengths of the nails? Assume that the lengths have a normal distribution.

- ☐ a. 2.526
- ☐ b. The mean cannot be computed from the information given.
- ☒ c. 2.506
- ☐ d. 2.516

[◀ Test 4.1 - Common families of distributions 1](#)

Direkt zu:

[Test 5 - Central limit theorem and Law of large numbers ▶](#)