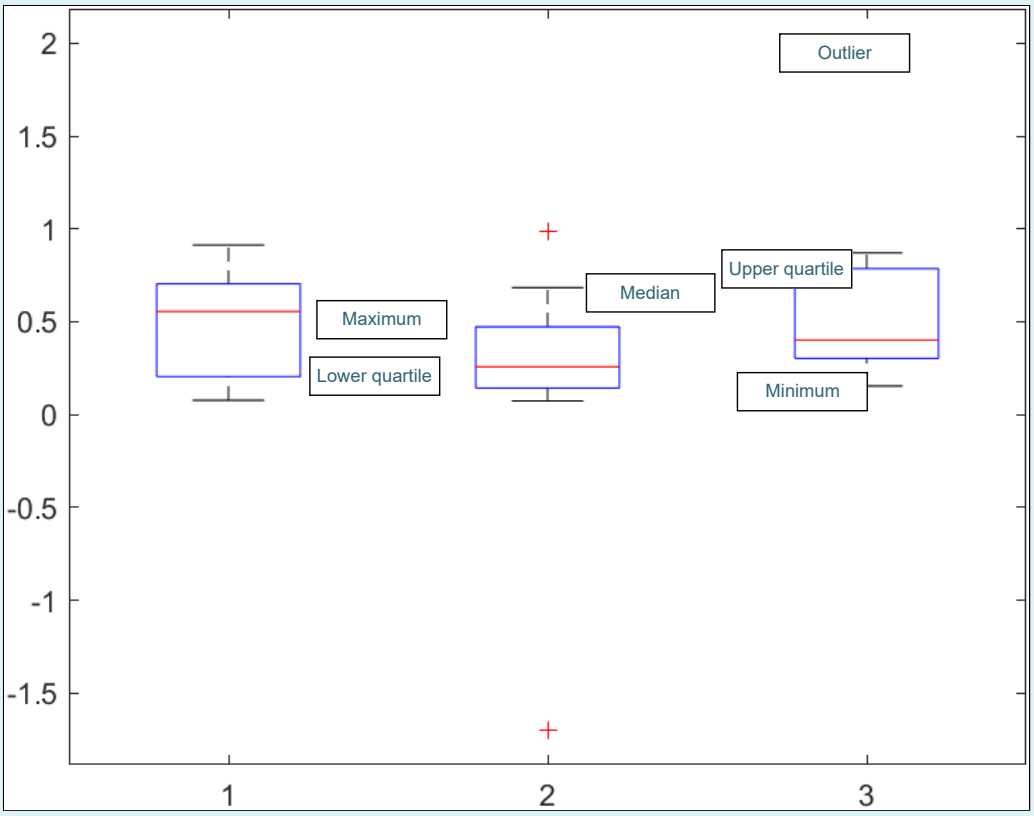
Started on	csütörtök, 10 december 2020, 5:59
State	Finished
Completed on	csütörtök, 10 december 2020, 7:19
Time taken	1 hour 19 mins
Grade	**7.33** out of 50.00 (**15**%)

Question **1**

Partially correct

Mark 1.33 out of 2.00

Drag the notions into the gaps on the figure below.



Válasza részben helyes.

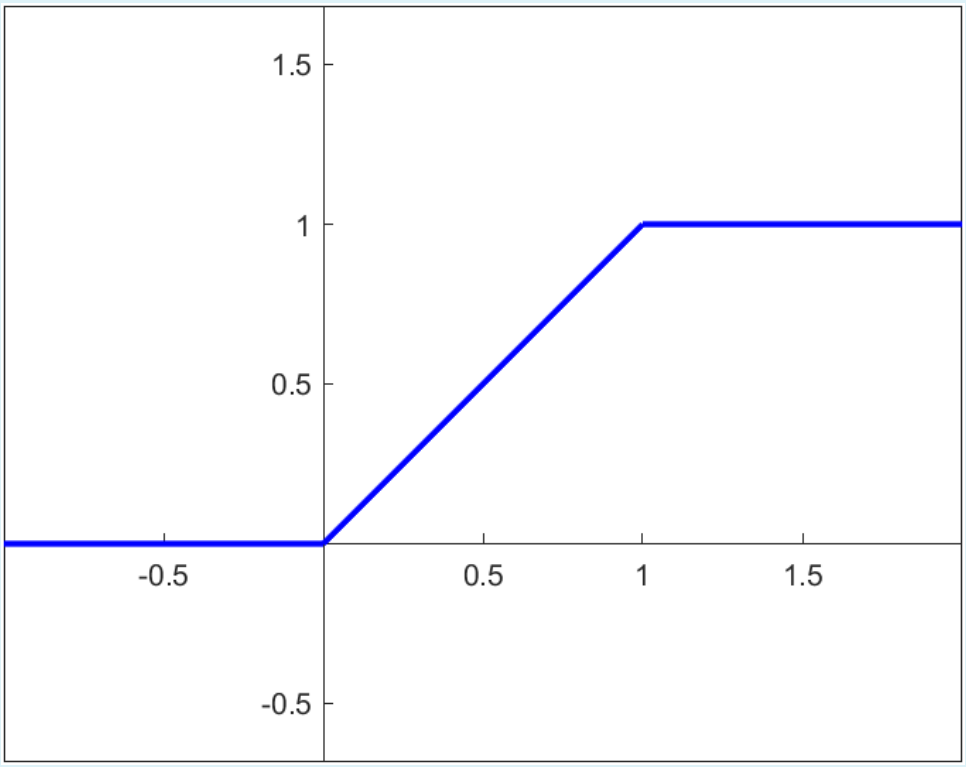
You have correctly selected 4.

Question **2**

Correct

Mark 2.00 out of 2.00

Examine the function on the figure below. Is it a cumulative distribution function or a probability density function? Which distribution does it correspond to?



It is

- a. the CDF of the exponential distribution.
- b. the PDF of the exponential distribution.
- c. the CDF of the normal distribution.
- d. the PDF of the uniform ditribution.
- e. the PDF of the normal distribution.
- f. the CDF of the uniform distribution. ✔

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The correct answer is:

the CDF of the uniform distribution.

Question **3**

Not answered

Marked out of 9.00

In a match making company the matchboxes are filled with an automatic machine. The number ξ of match-sticks in a randomly chosen box is a random variable with the following distribution:

number	**37**	**38**	**39**	**40**	**41**	**42**	**43**
probability	0.01	0.05	0.15	0.58	0.15	0.05	0.01

a.) Using Chebyshev's inequality give a lower bound for $P(37 < \xi < 43)$.

One possible correct answer is: 0.90222222222222

b.) Find the exact value of the above probability.

One possible correct answer is: 0.98

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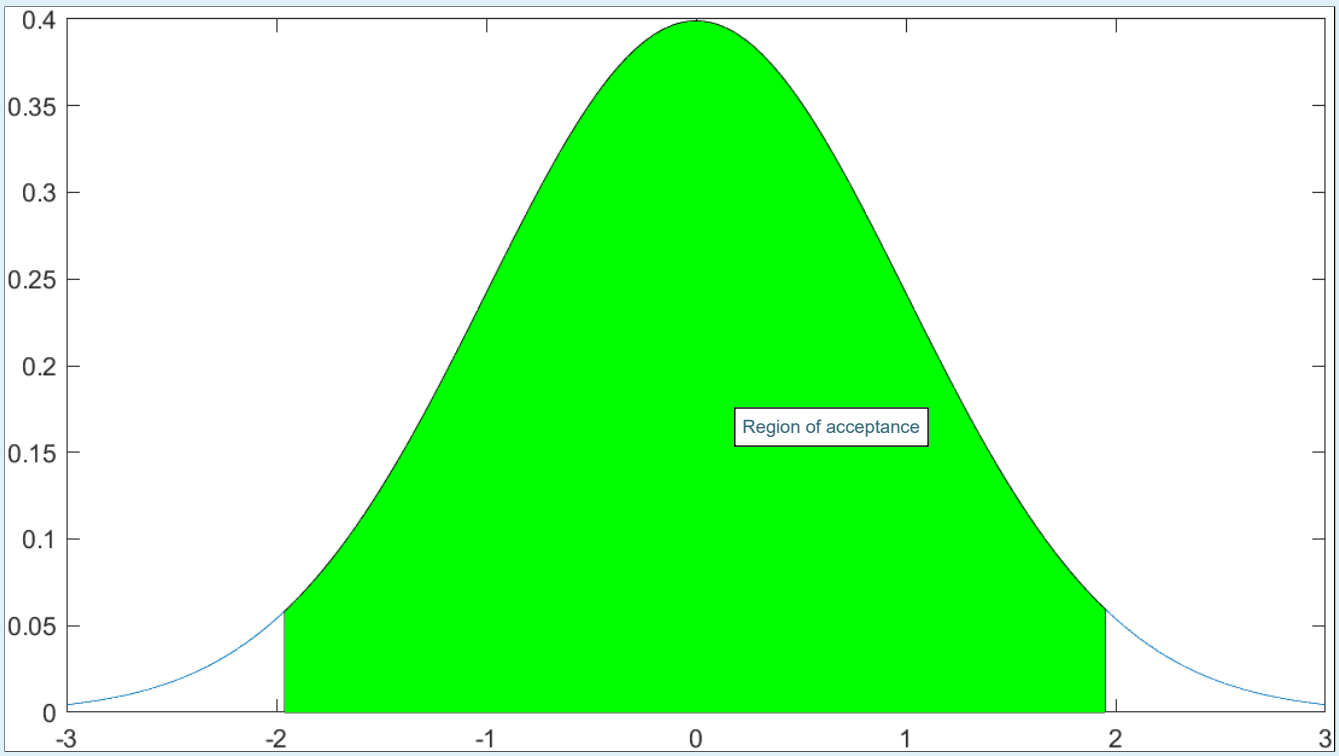
Question **4**

Correct

Mark 2.00 out of 2.00

Drag the notions corresponding to the Z-test into the gaps on the figure below.



Critica

Critical value

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Question **5**

Correct

Mark 2.00 out of 2.00

Experiments with a new variety of tomato are being conducted at an agricultural research station. The crop is grown under carefully controlled conditions on fourteen experimental plots and the yields, in kg per plot, are found to be as follows:

21.4 26.9 22.5 22.1 20.1 19.2 21.1 25.3 25.9 25 18 26.5 27.3 25.7

It is known that an established variety of tomato would have a mean yield of 23 kg per plot on the experimental plot.

The researchers are planning to test whether the new variety has a different mean yield.

How many degrees of freedom does the test have? / Determine the number of degrees of freedom for the test.

f=

13

Question **6**

Not answered

Marked out of 7.00

At a 93% confidence level, check if the hair and the eye colour are independent.
After observing 200 people we got the following table:

	Blonde hair	Brown hair	Black hair
Blue eyes	30	24	3
Brown eyes	10	47	22
Green eyes	22	33	9

1.) H_0: The hair colour and the eye colour are independent.
H_1: They are not independent.

2.) The value of the test statistic:

One possible correct answer is: 29.753291228645

3.) The critical value:

One possible correct answer is: 8.6664

4.) Decision (0, if we accept ~ 1, if we reject)

One possible correct answer is: 1

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Question **7**

Not answered

Marked out of 7.00

The air control informs the pilot of an aircraft about the altitude of the centre of the air corridor of height 100 metres where the aircraft should fly. The deviation, in metres, of the altitude of the aircraft from the given altitude is normally distributed with mean 25 metres, and standard deviation 50 metres. Find the probability that the aircraft flies in the air corridor.

One possible correct answer is: 0.62465526000516

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Question **8**

Not answered

Marked out of 4.00

For the sample below
10 -10 10 10 0
find the following values:
Median

✖

Mode

✖

Minimum

✖

Maximum

✖

Mean

✖

Question **9**

Not answered

Marked out of 3.00

In a random sample of size 6 the sum of the sample values equals 117, while the sum of their squares equals 2343. Find the variance of the sample.
f=

✖

Question **10**

Not answered

Marked out of 7.00

Experiment with a new variety of tomato are being conducted at an agricultural research station. The crop is grown under carefully controlled conditions on ten experimental plots and the yields, in kg per plot, are found to be as follows:

32.7, 30.1, 30.3, 28.5, 29.5, 29.9, 28, 32.9.

It is known that an established variety of tomato would have a mean yield of 30 kg per plot on the experimental plot. Test, at the 90% level of confidence, whether the new variety has a different mean yield, stating clearly your null and alternative hypotheses. State also the assumptions undelying your analysis.

1.) $H_0 : m =$ ☐

$H_1 : m \neq$ ☐

✖

One possible correct answer is: 30, 30

2.) The value of the test statistic:

☐

✖

One possible correct answer is: 0.3801412215426

3.) The boundaries of the region of acceptance:

[☐ , ☐]

✖

One possible correct answer is: -1.8946, 1.8946

4.) Decision (0, if we accept ~ 1, if we reject):

☐ ✖

One possible correct answer is: 0

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Question **11**

Not answered

Marked out of 5.00

A stick of length 10 meters is randomly broken into two parts. Find the cumulative distribution function (cdf) and the probability density function (pdf) of the length of the shorter part.

Cumulative distribution function: $F(x) = \begin{cases} \square \text{, if x<0,} \\ \square \text{, if 0<x<5,} \\ \square \text{, if x>5.} \end{cases}$

✖

One possible correct answer is: 0, x/5, 1

Probability density function.: $f(x) = \begin{cases} \square \text{, if 0<x<5,} \\ \square \text{, otherwise.} \end{cases}$

✖

One possible correct answer is: 0.2, 0

Your answer is incorrect.

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