X

Unit 4 - Week 2

Course outline

How to access the portal

Pre-requisite Assignment

Week 1

Week 2

- Probability Distributions
- Volume Fraction and Particle Size Part 3
- Volume Fraction and Particle Size Part 4
- Geometrical Probability I
- Geometrical Probability – II
- Quiz : Assignment 2
- WEEK 2 - FEEDBACK - Elementary Stereology for Quantitative Metallography
- Assignment 2 Solutions

Assignment 2

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2018-09-05, 23:59 IST.

1) From a data chart of average rainfall per day in Cherrapunji, a sample of size n = 200 was taken for statistical evaluation. The mean of the sample (x') was found to be 250. Assuming that the population follows a normal distribution with σ = 3, compute a 95% confidence interval for the population mean μ ***1 point***

The following link may be used for the statistical tables: https://www.medcalc.org/manual/values_of_the_normal_distribution.php

- [250.452 – 249.548]
- [250.322 – 249.678]
- [250.416 – 249.584]
- [250.614 – 249.386]

No, the answer is incorrect.
Score: 0

Accepted Answers:
[250.416 – 249.584]

2) A gun manufacturer claims that an average gun fires about 300 rounds without being cleaned. During a research, randomly 15 guns were chosen and it was found that the mean of successful fires was 290 rounds, without cleaning. The sample had a standard deviation of 50 rounds. Find the confidence interval at 98% confidence level. Fill in the numerical value (up to two decimal points) for the statement depicted below.

The following link may be used for the statistical tables: https://www.medcalc.org/manual/t-distribution.php

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 33.86,33.91

2 points

3) Estimate the relative error in the previous question and choose the appropriate choice (from a to e) depicting the modification step that could reduce the relative error. ***1 point***

I) 24.88% II) 25.37% III) 25.82%
A) Reducing the number of samples
B) Increasing the number of samples
C) Choosing the best samples to get least std. deviation

- I and B, C
- II and A
- III and B, C
- III and B
- II and C

No, the answer is incorrect.
Score: 0

Accepted Answers:
III and B

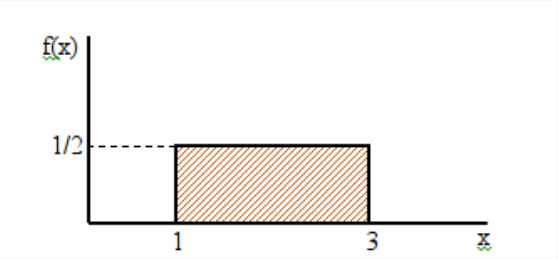
4) Compute the mean tangent diameter of an ellipse with the major axis being 20mm and minor axis being 10mm. If the ellipse is used as an object in Buffon's experiment, then find the probability of intersection, when the parallel lines are placed 25mm apart from each other. (Enter the numerical answer up to two decimal points).

No, the answer is incorrect.
Score: 0

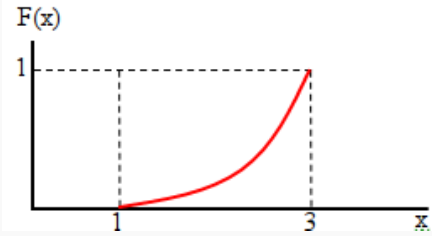
Accepted Answers:
(Type: Range) 0.61,0.64

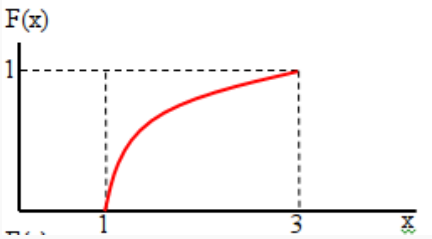
1 point

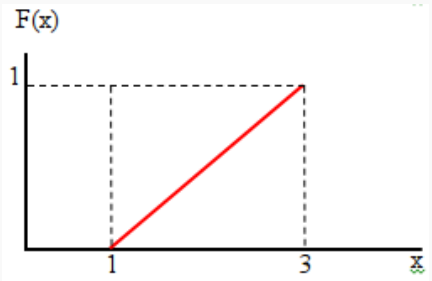
5) A uniform distribution is given in the figure below: ***1 point***

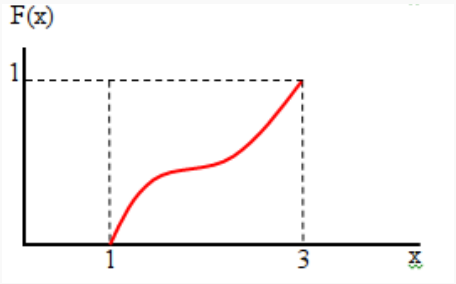


The correct cumulative distribution will be:



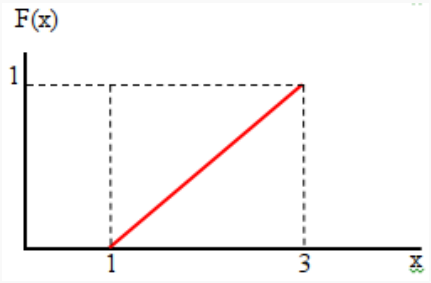




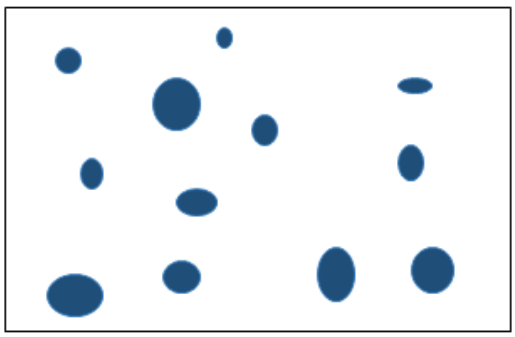


No, the answer is incorrect.
Score: 0

Accepted Answers:



6) 10 points are placed at random in the microstructure consisting of second phase particles of volume fraction 0.25. What will be the probabilities of obtaining 5 points and 7 points inside the particles? Choose the most appropriate answer. ***1 point***



- 0.058, 0.005
- 0.078, 0.003
- 0.058, 0.003
- 0.078, 0.005

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.058, 0.003

7) In the above problem, the theoretical mean and standard deviation of the points falling inside the second phase will be respectively about? ***1 point***

- 2.5, 1.37
- 4.5, 1.37
- 2.5, 2.37
- 4.5, 2.37

No, the answer is incorrect.
Score: 0

Accepted Answers:
2.5, 1.37

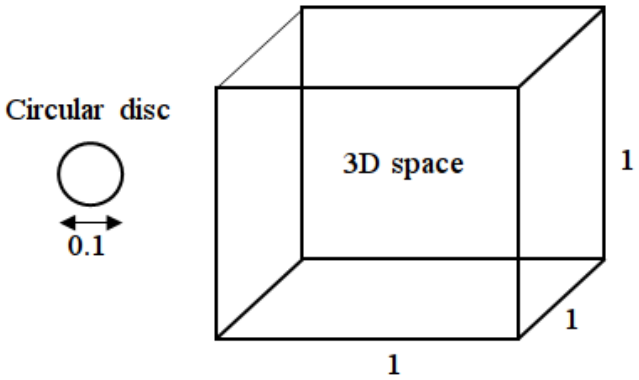
8) The 3D mean tangent diameter of a circular disc of diameter 0.1 unit is approximately? ***1 point***

- 0.0485
- 0.0585
- 0.0685
- 0.0785

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.0785

9) 100 circular discs (each of diameter 0.1 units) are randomly distributed in a cube (of side length1 unit). If this microstructure is sectioned by a randomly located 2D plane parallel to one of the faces, then the expected number of line segments will be approximately _____ ***1 point***



- 4
- 8
- 12
- 16

No, the answer is incorrect.
Score: 0

Accepted Answers:
8

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