

Name: _____ Student ID# _____ Total:

This is not a real test.

1

Consider the following 20 numbers:

0.025	0.065	0.090	0.097	0.138	0.140	0.180
0.245	0.255	0.275	0.390	0.480	0.538	0.582
0.611	0.660	0.770	0.825	1.270	3.150	

The sample mean (“central tendency”) equals 0.539.

- Compute the sample variance (“dispersion”).

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- Why is it reasonable to suspect that these numbers are exponentially distributed? (Maximum of 15 words).

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- Test the hypothesis that the numbers are uniformly distributed using the χ^2 test.

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2

- If the arrival rate is 20 customers per hour, what is the mean interarrival time? What is the variance?

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- What is the relationship between the Poisson, Exponential, Binomial and Geometric distributions?

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3

An office has two photocopiers. On any given day, each of them breaks down with probability 0.1. If a photocopier is broken at the end of a day, the repairman comes the next morning and fixes it—only one per day—working on it a whole day.

Write a continuous simulator modelling the state of the photocopiers.

The repairman has no other income and bills the office \$400 per day of work. What is the expected income of the repairman assuming that the office is open 200 days a year?

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4

The number of hurricanes hitting Florida annually has a Poisson distribution with a mean of 1.5.

- What is the probability that more than 2 hurricanes will hit Florida in 2010?

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- What is the probability that exactly 1 hurricane will hit Florida in 2010?

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- What is the probability that no hurricane will hit Florida in 2010?

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