

Statistics for Geography (GEOG 533) Lab 4

1. The number of points scored by each team in a tournament is normally distributed, with mean $\mu = 32$ and standard deviation $\sigma = 7$. What is the probability of:
 - a. A team scoring 20 points or fewer? Plot the density function and shade the area. (5 pt.)
 - b. A team scoring more than 35 points? Plot the density function and shade the area. (5 pt.)
 - c. A team scoring between 20 and 40 points? Plot the density function and shade the area. (5 pt.)
2. The number of comments per post on a social media site is exponentially distributed, with the average post receiving ten comments. What percentage of posts get:
 - a. Fewer than three comments? Plot the density function and shade the area. (5 pt.)
 - b. More than 20 comments? Plot the density function and shade the area. (5 pt.)
 - c. Between five and ten comments? Plot the density function and shade the area. (5 pt.)
3. Basic raster creation and calculation:
 - a. Create a first raster (30 rows \times 30 columns) and assign values to the raster based on random values from a uniform distribution. Plot the raster and the histogram. (5 pt.)
 - b. Create a second raster (30 rows \times 30 columns) and assign values to the raster based on random values from a normal distribution. Plot the raster and the histogram. (5 pt.)
 - c. Create a third raster (30 rows \times 30 columns) and assign values to the raster based on cell-by-cell addition of the first raster and the second raster. Plot the raster and the histogram. (5 pt.)
 - d. Calculate the mean value of the third raster. Reclassify the third raster into a binary image: 1 (cell value $>$ mean value) and 0 (cell value \leq mean value). Save the reclassified image to your working directory as a TIFF image. (5 pt.)

What to submit:

1. An R Markdown document that contains the script for each question.
2. An HTML document that contains the script/output for each question.
3. GitHub.io URL for the html document.

File name convention for assignment submissions: lastname_firstname_lab4.zip