Homework for Lecture 3: R Basics

The following homework assignment should be completed in the R console and your code/outputs should then be copied to a text (or Word) document for submission. Please do not delete any errors that you make, as I would like to see your process in answering the questions. You may discuss the assignment with your classmates, but your write-up and work should be done independently of your classmates. The use of AI is considered a violation of academic policy for this assignment. When in doubt, ask me what is and is not allowed.

Answer the following questions. When you run code make sure you explain what you are doing and what the output is telling us. This can be done with a comment *# Like this.*

Note: If your name has a space, hyphen, apostrophe, or accent mark, simplify it when creating your variable name.

1. Create a comment *# Exercise 1: Your Name.* Then write the following mathematical expressions in R. Your output should match the listed result.
   (a) $\left(2 \times \frac{3+5}{3}\right)^2 - \frac{4+3}{6-2}$, which should result in 26.6944.
   (b) $9^{1/2} \times (7+2)^2 - \frac{15}{3}$, which should result in 238.
   (c) $\frac{4 \times (2^3+1)}{(5-2)^2} + 10$, which should result in 14.
   (d) $2^{4\times 2} - 6 \times (9-7) + \frac{27}{4}$, which should result in 250.75.
2. Create a comment *# Exercise 2: Your Name.* Then answer the following questions:
   (a) Create a variable named after your first name and save your favorite number between 10 and 100 to it.
   (b) Create a second variable named after your last name and save your second favorite number between 5 and 30 to it. This number should be different from your first one.
   (c) Calculate the sum of your two variables.
   (d) Calculate the product of your two variables.
   (e) Calculate your first-name variable raised to the power of your last-name variable.
   (f) Calculate the remainder when dividing your first-name variable by your last-name variable.
   (g) Create a variable called `x` using the following formula:
   $$x = 5 \times \text{first-name variable} + 5.34\text{e-}02 + \frac{123}{\text{last-name variable}}$$
   (h) Display the variable `x`, then remove `x` from your environment, and then try to display the variable again. Explain what happens.