# Tutorial Exercises Week 2

## Question 1

Use R to calculate the principal cubed root of 64, $\sqrt[3]{64}$.

## Question 2

Use R to calculate $\ln(e^5)$.

## Question 3

Use R to calculate $\log_4(64)$.

That is, take the log of 64 to the base 4.

## Question 4

In R we create vectors with the `c()` function (the combine function). In a vector, all elements need to have the same type (like numerical, logical, character). If we combine elements of different types into a vector, the `c()` function will force elements to a common type.

What types are the following vectors?

- `c(1, 2, 3, TRUE, FALSE)`
- `c(1, 2, "3")`
- `c(TRUE, FALSE, "Yes", "No")`

## Question 5

Consider the sequence $(1.0, 1.2, 1.4, 1.6, ..., 100)$.

- How many numbers are in the sequence?
- What is the 100th number in the sequence?
- What is the median value in the sequence?

## Question 6

Create the sequence:

$$(1, 1, 2, 2, 3, 3, 4, 4, 5, 5, ..., 98, 98, 99, 99, 100, 100)$$

Assign this sequence to the variable `x`.

Write a command to get the subset of this sequence with values exceeding 60. The output should be:

$$(61, 61, 62, 62, ..., 99, 99, 100, 100)$$

What is the average of this subsequence?

## Question 7

Using the example logical vectors `a` and `b` from the book:

```
a <- c(TRUE, TRUE, FALSE, FALSE)
b <- c(TRUE, FALSE, TRUE, FALSE)
```

Which command returns the elements where `a` and `b` are not both `TRUE`?

## Question 8

Download the file rotterdam-airbnb.csv.

This contains data on Rotterdam Airbnb listings.

Read it into R. What is the average price of a night's stay in the data?

If the data is loaded in R as `df`, you can get the vector of prices with the command `df$price`.