Introduction to R
Session 9: Writing functions

1. The *factorial* of a non-negative integer n is defined to be

$$n! = n * (n - 1) * (n - 2) \ldots * 2 * 1,$$

   so for example, $4! = 4 * 3 * 2 * 1 = 24$. Create a function that takes a non-negative integer as the argument and returns the factorial of the integer. (Hint: you can use a while loop, but there are many ways to do this). What is the value of 10! ?

2. The formula for converting a temperature in Fahrenheit (F) to Celsius (C) is:

$$C = (5/9) * (F - 32)$$

   Write a function that converts a Fahrenheit temperature to Celsius. Use this function to create a data frame containing Fahrenheit values 30, 31, 32, up to 100, and the corresponding temperatures in Celsius.

3. Obtain a root for the following function with the Newton-Raphson method:

$$f(x) = 5x^3 - 4x^2 + 12x - 7$$

   (Hint: Implement the Newton-Raphson function given in the session 9 slides).