Exercise: **R Basics**

Day 1, Part A

1. Start a new R script for the answers to this exercise. Add a header with your name, the date, and a description of the code.

```
## Author: Your name
## Date: Today's date
## Description: Boot camp lecture 1A exercise
```

2. Load the `stats` and `ggplot2` packages (just for practice, we're not going to use these yet).

```
> library(boot)
> library(stats)
```

3. Use two different functions to find the base 2 logarithm of 512 (hint: see the help file for `log()`).

```
> log(512, 2)
[1] 9
```

```
> log2(512)
[1] 9
```

4. Consider the `round()` function.

   a. Pull up the help file.

   ```
   > help(round)
   ```

   b. What does this function do?

   ```
   > # It takes a number and rounds it to the specified number of digits
   ```

   c. What arguments does this function take?

   ```
   > # x = a number (or vector) to be rounded
   > # digits = the number of decimal places to round to
   ```

   d. Which (if any) arguments are required?

   ```
   > # x is required
   ```

   e. Which (if any) arguments have defaults? What are these defaults?

   ```
   > # digits defaults to 0
   ```

   f. Round 365/12 to the nearest 10th, naming all arguments.

   ```
   > round(x = 365/12, digits = 1)
   [1] 30.4
   ```

   g. Round 365/52 to the nearest 100th, without naming any arguments.

   ```
   > round(365/52, 2)
   [1] 7.02
   ```

5. Solve for x: $3x^2 + 5x - 20 = 0$ (hint: https://en.wikipedia.org/wiki/Quadratic_formula).

```
> (-5 + sqrt(5^2 - 4 * 3 * -20))/(2 * 3)
[1] 1.879803
```

```
> (-5 - sqrt(5^2 - 4 * 3 * -20))/(2 * 3)
[1] -3.54647
```