R Expressions Homework

Text: R Crash Course

Last Name	First Name	Date

Find an R command to accomplish a given task.

1. Create a dataset `x` with data 3, 6, 17, 28, and −14.

2. Create a dataset `y` with data −1.5, −0.4, 0, 0.1, and 0.08.

3. Create a dataset `colors` with the names of some colors: yellow, purple, and orange.

4. Create a dataset `mammals` with the names of some mammals: bison, fox, and camel.

5. Create a dataset `s1` with integers from 170 up to and including 210.

6. Create a dataset `s2` with integers from −30 up to and including −4.

7. Create a dataset `a` with numbers 10.5, 11.5, 12.5, . . . , 22.5, 23.5.

8. Create a dataset `b` with numbers 20, 30, 40, . . . , 460, 470.

Find the values of the following algebraic expressions using R as a calculator. Start by creating the variables a, b, and c, and write each expression as a single line in R. Round your answers to no fewer than 4 significant digits. Throughout this homework, use the following values for the variables:

$$a = 1.618$$
$$b = -42.496$$
$$c = 2.71828$$

9. $3a - 4.09$

10. $c - 4(a + b)$

11. $\dfrac{a-b}{c}$

12. $\dfrac{a+10}{c/\sqrt{6}}$

13. $\sqrt{\dfrac{a(2-a)}{-b}}$

14. $c(1-c)\left(\dfrac{a}{b}\right)^2$

15. $\left(\frac{a-bc}{2}\right)^{3/2}$

16. $\frac{a+b}{a-b}+\frac{1}{c}$

17. $\frac{2a^3}{3}-6(b-1)(7c+3)^2$

18. $\sqrt{b-14}$ (explain why you are getting this answer)

19. $\frac{-b+\sqrt{b^2-4ac}}{2a}$

20. $\sqrt{|\sqrt{c}-\sqrt{a-b}|}$

21. Find the sum of the first 100 positive integer squares, that is, $1^2+2^2+3^2+\ldots+99^2+100^2$, without typing in 100 terms. State the R command you used to produce the answer.

22. Find the arithmetic average of the first 1000 positive integer square roots, that is, the average of $\sqrt{1},\sqrt{2},\sqrt{3},\ldots,\sqrt{999},\sqrt{1000}$. State the R command you used to produce the answer.

Answers

1. `x = c(3, 6, 17, 28, -14)`

3. `colors = c("yellow", "purple", "orange")`

5. `s1 = 170:210`

7. `a = (10:23) + 0.5`

9. 0.764

11. 16.22864

13. 0.1205999

15. 448.208

17. 126636.5

19. 26.2004

21. 338350
    ```
    sum((1:100)^2)
    ```