

R EXPRESSIONS HOMEWORK

TEXT: R CRASH COURSE

LAST NAME	FIRST NAME	DATE
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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. $\frac{a - b}{c}$

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

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

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

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, $1^2 + 2^2 + 3^2 + \dots + 99^2 + 100^2$, 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 $\sqrt{1}, \sqrt{2}, \sqrt{3}, \dots, \sqrt{999}, \sqrt{1000}$. 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)`