lab4

Liz Chamiec-Case

```
5 + 3
```

```
[1] 8
```

```
5 - 3
```

```
[1] 2
```

```
5 * 3
```

```
[1] 15
```

```
5 / 3
```

```
[1] 1.666667
```

```
x <- c(56, 95.3,
0.4) x
```

```
[1] 56.0 95.3 0.4
```

```
this_is_a_really_long_name <- 2.5
```

```
r_rocks <- 2 ^ 3
```

```
#rrocks # commented because Error: object 'rrocks'

not found # R_rocks # commented because Error: object

'rrocks' not found

seq(1,10)
```

```
 [1] 1 2 3 4 5 6 7 8 9 10
```

```
seq(1,10, by=2)
```

```
[1] 1 3 5 7 9
```

```
example(seq)
```

```
seq> seq(0, 1, length.out = 11)
 [1] 0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

seq> seq(stats::rnorm(20)) # effectively 'along'
 [1] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

seq> seq(1, 9, by = 2) # matches 'end'
[1] 1 3 5 7 9

seq> seq(1, 9, by = pi)# stays below 'end'
[1] 1.000000 4.141593 7.283185

seq> seq(1, 6, by =
3) [1] 1 4

seq> seq(1.575, 5.125, by = 0.05)
  [1] 1.575 1.625 1.675 1.725 1.775 1.825 1.875 1.925 1.975 2.025
 2.075 2.125 [13] 2.175 2.225 2.275 2.325 2.375 2.425 2.475 2.525
                     2.575 2.625 2.675 2.725
```

```
[25] 2.775 2.825 2.875 2.925 2.975 3.025 3.075 3.125 3.175 3.225
3.275 3.325
[37] 3.375 3.425 3.475 3.525 3.575 3.625 3.675 3.725 3.775 3.825
3.875 3.925
[49] 3.975 4.025 4.075 4.125 4.175 4.225 4.275 4.325 4.375 4.425
4.475 4.525
[61] 4.575 4.625 4.675 4.725 4.775 4.825 4.875 4.925 4.975 5.025
5.075 5.125 seq> seq(17) # same as 1:17, or even better
seq_len(17)
 [1] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
```

```
date()
```

```
[1] "Sat Oct 8 18:22:34 2022"
```

```
??"cross tabulate"
```

```
starting httpd help server ... done
```

```
example(log)
```

```
log> log(exp(3))
[1] 3

log> log10(1e7) # =

7 [1] 7 log> x <-

10^-(1+2*1:9)

log> cbind(x, log(1+x), log1p(x), exp(x)-1,
         expm1(x)) x
 [1,] 1e-03 9.995003e-04 9.995003e-04 1.000500e-03 1.000500e-03
 [2,] 1e-05 9.999950e-06 9.999950e-06 1.000005e-05 1.000005e-05
 [3,] 1e-07 1.000000e-07 1.000000e-07 1.000000e-07 1.000000e-07
 [4,] 1e-09 1.000000e-09 1.000000e-09 1.000000e-09 1.000000e-09
 [5,] 1e-11 1.000000e-11 1.000000e-11 1.000000e-11 1.000000e-11
```

```
[6,] 1e-13 9.992007e-14 1.000000e-13 9.992007e-14 1.000000e-13
[7,] 1e-15 1.110223e-15 1.000000e-15 1.110223e-15 1.000000e-15
[8,] 1e-17 0.000000e+00 1.000000e-17 0.000000e+00 1.000000e-17
[9,] 1e-19 0.000000e+00 1.000000e-19 0.000000e+00 1.000000e-19
```

```
length(3.1)
```

```
[1] 1
```

```
x <- c(56, 95.3,
0.4) x
```

```
[1] 56.0 95.3 0.4
```

```
y <- c(3.2, 1.1,
0.2) y
```

```
[1] 3.2 1.1 0.2
```

```
x + y
```

```
[1] 59.2 96.4 0.6
```

```
x - y
```

```
[1] 52.8 94.2 0.2
```

```
x / y
```

```
[1] 17.50000 86.63636 2.00000
```

```
sqrt(x)
```

```
[1] 7.4833148 9.7621719 0.6324555
```

```
round(sqrt(x), 3)
```

```
[1] 7.483 9.762 0.632
```

```
log(x)/2 + 1
```

```
 [1] 3.0126758 3.2785149 0.5418546 x <- c(56, 95.3, 0.4) x[2]
```

```
 [1] 95.3
```

```
x[1]
```

```
[1] 56
```

```
x[4]
```

```
[1] NA
```

```
x[3] <-
0.5 x
```

```
[1] 56.0 95.3 0.5
```