

## Exercise 2

### Exercise 2

#### A

Create 2 vectors twice: using the colon operator and the seq(function)

vec1: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

vec2: 2, 7, 12

```
vec1 <- 1:10
vec2 <- seq(2, 12, 5)
cat("Vec1: ", vec1, "\nVec2: ", vec2)
```

```
## Vec1:  1 2 3 4 5 6 7 8 9 10
```

```
## Vec2:  2 7 12
```

#### B

Create a 4x2 matrix of all zeros and store it in a variable (mymat). Then, replace the second row in the matrix with a vector consisting of a 3 and a 6.

```
mymat <- matrix(
  0,
  4,
  2
)
cat("Starting matrix:\n")
```

```
## Starting matrix:
```

```
mymat
```

```
##      [,1] [,2]
## [1,]    0    0
## [2,]    0    0
## [3,]    0    0
## [4,]    0    0
```

```
mymat[2, 1] <- 3
mymat[2, 2] <- 6
cat("Replaced matrix:\n")
```

```
## Replaced matrix:
```

```
mymat
```

```
##      [,1] [,2]
## [1,]    0    0
## [2,]     3     6
## [3,]    0    0
## [4,]    0    0
```

## C

Create a vector `x` which consists of 20 equally spaced points in the range from  $-\pi$  to  $+\pi$ . Create a `y` vector which is  $\sin(x)$ .

```
x <- seq(-pi, pi, length.out = 20)
```

```
x
```

```
## [1] -3.1415927 -2.8108987 -2.4802047 -2.1495108 -1.8188168
## [6] -1.4881228 -1.1574289 -0.8267349 -0.4960409 -0.1653470
## [11]  0.1653470  0.4960409  0.8267349  1.1574289  1.4881228
## [16]  1.8188168  2.1495108  2.4802047  2.8108987  3.1415927
```

```
y <- sin(x)
```

```
y
```

```
## [1] -1.224647e-16 -3.246995e-01 -6.142127e-01 -8.371665e-01
## [5] -9.694003e-01 -9.965845e-01 -9.157733e-01 -7.357239e-01
## [9] -4.759474e-01 -1.645946e-01  1.645946e-01  4.759474e-01
## [13]  7.357239e-01  9.157733e-01  9.965845e-01  9.694003e-01
## [17]  8.371665e-01  6.142127e-01  3.246995e-01  1.224647e-16
```