

## module\_06.R

gregfoster

2021-02-19

*#1. Consider  $A = \text{matrix}(c(2,0,1,3), \text{ncol}=2)$  and  $B = \text{matrix}(c(5,2,4,-1), \text{ncol}=2)$ .*

```
A <- matrix(c(2,0,1,3), ncol=2)
B <- matrix(c(5,2,4,-1), ncol=2)
```

*#a) Find  $A + B$*

A + B

```
##      [,1] [,2]
## [1,]    7    5
## [2,]    2    2
```

*#b) Find  $A - B$*

A - B

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

*#2. Using the `diag()` function to build a matrix of size 4 with the following values in the diagonal 4,1,2,3.*

```
diag_matrix <- diag(c(4,1,2,3))
diag_matrix
```

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

*#3. Generate the matrix in Canvas:*

```
identity3 <- diag(x=c(3,3,3,3,3)) #Creates a 5x5 identity matrix with 3's in
the diagonal
identity3
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    3    0    0    0    0
## [2,]    0    3    0    0    0
## [3,]    0    0    3    0    0
```

```
## [4,]    0    0    0    3    0
## [5,]    0    0    0    0    3

C <- matrix(c(0,2,2,2,2,1,0,0,0,0,1,0,0,0,0,1,0,0,0,0,1,0,0,0,0), ncol=5)
#Creates a 5x5 matrix with 1's in the top row in columns 2 through 5, and 2's
in the first column in rows 2 through 5
C

##      [,1] [,2] [,3] [,4] [,5]
## [1,]    0    1    1    1    1
## [2,]    2    0    0    0    0
## [3,]    2    0    0    0    0
## [4,]    2    0    0    0    0
## [5,]    2    0    0    0    0

solution <- identity3 + C #Adding the two matrices together creates the
matrix shown in Canvas
solution #It worked!

##      [,1] [,2] [,3] [,4] [,5]
## [1,]    3    1    1    1    1
## [2,]    2    3    0    0    0
## [3,]    2    0    3    0    0
## [4,]    2    0    0    3    0
## [5,]    2    0    0    0    3
```