Homework 2

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# R crash course

this is test. What is the average weight in mtcars data.

mean(mtcars$wt)

[1] 3.21725

so here is the average weight: 3.22.

another test:

let’s type the regression equation:

Now let’s put it in the center:

another fun test: Let’s import a complicated formula into markdown using mathpix:

## Question 1

Replicate the following vector of numbers using seq() function and call it **v1**.

v1 <- seq(1,17,4)  
v1

[1] 1 5 9 13 17

## Question 2

## I)

A <-matrix(data = seq(20,39), nrow = 4, ncol = 5, byrow = TRUE)  
A

[,1] [,2] [,3] [,4] [,5]  
[1,] 20 21 22 23 24  
[2,] 25 26 27 28 29  
[3,] 30 31 32 33 34  
[4,] 35 36 37 38 39

## II)

colnames(A) <- c('A','B','C','D','E')  
A

A B C D E  
[1,] 20 21 22 23 24  
[2,] 25 26 27 28 29  
[3,] 30 31 32 33 34  
[4,] 35 36 37 38 39

## III)

B <- A[c(2,4) , c(2,4)]  
B

B D  
[1,] 26 28  
[2,] 36 38

## IV)

t(B)

[,1] [,2]  
B 26 36  
D 28 38

## V)

B\_inverse <- solve(B)  
B\_inverse

[,1] [,2]  
B -1.9 1.4  
D 1.8 -1.3

## VI)

B %\*% B\_inverse

## [,1] [,2]  
## [1,] 1 0  
## [2,] 0 1

It is called an Identity Matrix.

## Question 3

Assign the dataframe mtcars from the built-in datasets in R to a new dataframe and call it df. Show the first 10 rows of your dataframs.

df<- mtcars  
head(df,10)

mpg cyl disp hp drat wt qsec vs am gear carb  
Mazda RX4 21.0 6 160.0 110 3.90 2.620 16.46 0 1 4 4  
Mazda RX4 Wag 21.0 6 160.0 110 3.90 2.875 17.02 0 1 4 4  
Datsun 710 22.8 4 108.0 93 3.85 2.320 18.61 1 1 4 1  
Hornet 4 Drive 21.4 6 258.0 110 3.08 3.215 19.44 1 0 3 1  
Hornet Sportabout 18.7 8 360.0 175 3.15 3.440 17.02 0 0 3 2  
Valiant 18.1 6 225.0 105 2.76 3.460 20.22 1 0 3 1  
Duster 360 14.3 8 360.0 245 3.21 3.570 15.84 0 0 3 4  
Merc 240D 24.4 4 146.7 62 3.69 3.190 20.00 1 0 4 2  
Merc 230 22.8 4 140.8 95 3.92 3.150 22.90 1 0 4 2  
Merc 280 19.2 6 167.6 123 3.92 3.440 18.30 1 0 4 4

# computer exercise

## Question 4

### (i)

What is percentage of the men in the sample report abusing alcohol?

df <- alcohol  
summary(df$abuse)

Min. 1st Qu. Median Mean 3rd Qu. Max.   
0.00000 0.00000 0.00000 0.09917 0.00000 1.00000

from the summary table above, 9.917% of men are alcohol abusers in this data set.

or alternatively the number is 0.099