3. Create a report investigating how different values of n and σ impact the ability for your linear regression function to learn the coefficients, β, used to generate the output vector Y

Different values of n (Size of the Data set), standard deviation effect the output coefficients (Beta values) and Output vector Y

For Example

1) If n = 2 (and m = 7) and standard deviation = 4 then

   Beta values =>

```
[[ 0.71242127]
 [ 0.05914424]
 [-0.36331088]
 [ 0.00328884]
 [-0.10593044]
 [ 0.79305332]
 [-0.63157163]
 [-0.00619491]]
```

   Output Vector Y =>

```
[[1.22591846]
 [2.29367828]]
```

2) If n = 2 (and m = 7) and standard deviation = 5 then

   Beta values =>

```
[[ 0.71242127]
 [ 0.05914424]
 [-0.36331088]
 [ 0.00328884]
 [-0.10593044]
 [ 0.79305332]
 [-0.63157163]
 [-0.00619491]]
```

   Output Vector Y =>

```
[[1.12485085]
 [2.19261067]]
```

3) If n = 3 (and m = 7) and standard deviation = 5 then

Beta values =>

```
[[ 0.10073819]
 [ 0.35543847]
 [ 0.26961241]
 [ 1.29196338]
 [ 1.13934298]
 [ 0.4944404 ]
 [-0.33633626]
 [-0.10061435]]
```

Output Vector Y =>

```
[[8.65245732]
 [6.98413102]
 [7.04842521]]
```

- Thus, Change in values of Size of the Dataset Effects in Size of the Output Vector of Size (n x 1)
- Change in Standard Deviation Values effect the beta values and also the output vector