Solutions to Session 7 Assignment 1

#1. Exercise: Explore the relationship between the following, where x contains numbers from 1 to 100:
#x and x^2
x<- c(1:100)
x
y<- c(x^2)
y
plot(x,y, main = "Relationship between x and its square", xlab = "Value of X", ylab = "Square of X")

```
Console  G:/Business Analytics_R_Acad glid/Assignments/Session 7 Assignment 1/
> #1. Exercise: Explore the relationship between the following, where x contains numbers from 1 to 100:
> #x and x^2
> x<- c(1:100)
> x
  [1]   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26
 [27]  27  28  29  30  31  32  33  34  35  36  37  38  39  40  41  42  43  44  45  46  47  48  49  50  51  52
 [53]  53  54  55  56  57  58  59  60  61  62  63  64  65  66  67  68  69  70  71  72  73  74  75  76  77  78
 [79]  79  80  81  82  83  84  85  86  87  88  89  90  91  92  93  94  95  96  97  98  99 100
> y<- c(x^2)
> y
  [1]     1     4     9    16    25    36    49    64    81   100   121   144   169   196   225   256   289
 [18]   324   361   400   441   484   529   576   625   676   729   784   841   900   961  1024  1089  1156
 [35]  1225  1296  1369  1444  1521  1600  1681  1764  1849  1936  2025  2116  2209  2304  2401  2500  2601
 [52]  2704  2809  2916  3025  3136  3249  3364  3481  3600  3721  3844  3969  4096  4225  4356  4489  4624
 [69]  4761  4900  5041  5184  5329  5476  5625  5776  5929  6084  6241  6400  6561  6724  6889  7056  7225
 [86]  7396  7569  7744  7921  8100  8281  8464  8649  8836  9025  9216  9409  9604  9801 10000
> plot(x,y,  main = "Relationship between x and its square", xlab = "Value of X", ylab =  "Square of X")
>
```
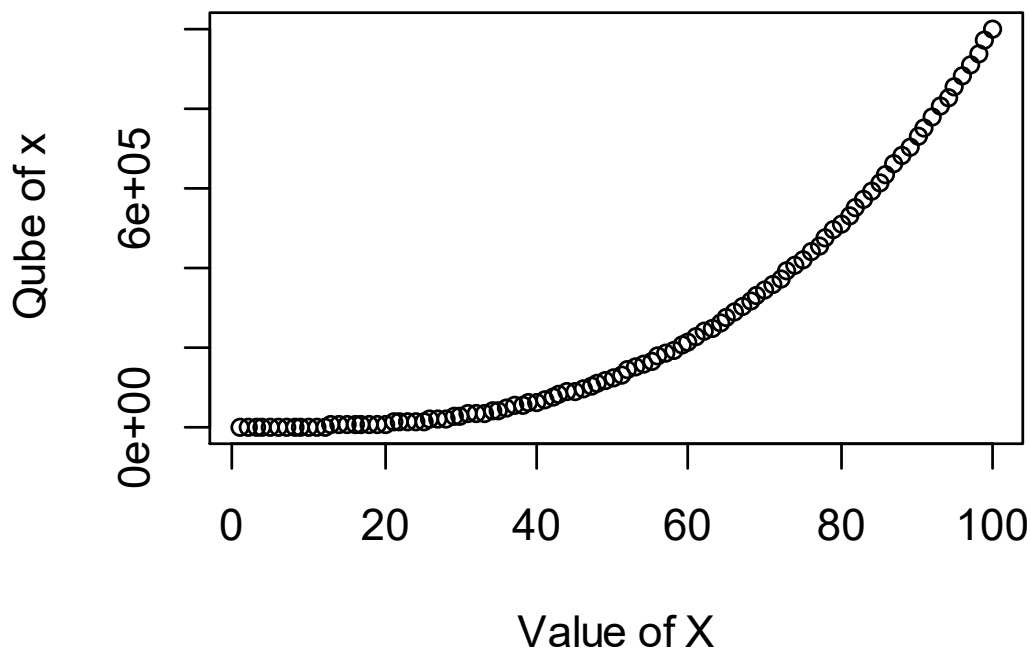

Relationship between x and its square
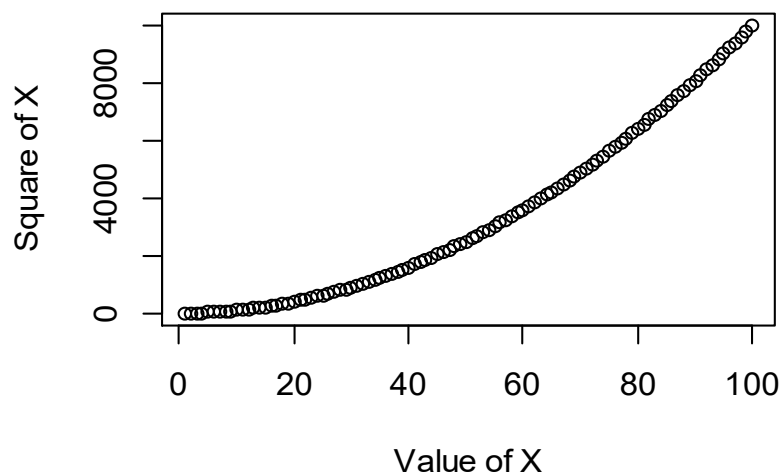
```
#x and x^3, x<- c(1:100)
y<- c(x^3)
y
plot(x,y,  main = "Relationship between x and its qube", xlab = "Value of X", ylab =
"Qube of x" )
```

```
> #x and x^3,
> x<- c(1:100)
> y<- c(x^3)
> y
 [1]       1       8      27      64     125     216     343     512     729    1000    1331    1728    2197
[14]    2744    3375    4096    4913    5832    6859    8000    9261   10648   12167   13824   15625   17576
[27]   19683   21952   24389   27000   29791   32768   35937   39304   42875   46656   50653   54872   59319
[40]   64000   68921   74088   79507   85184   91125   97336  103823  110592  117649  125000  132651  140608
[53]  148877  157464  166375  175616  185193  195112  205379  216000  226981  238328  250047  262144  274625
[66]  287496  300763  314432  328509  343000  357911  373248  389017  405224  421875  438976  456533  474552
[79]  493039  512000  531441  551368  571787  592704  614125  636056  658503  681472  704969  729000  753571
[92]  778688  804357  830584  857375  884736  912673  941192  970299 1000000
> plot(x,y,  main = "Relationship between x and its qube", xlab = "Value of X", ylab =  "Qube of x" )
>
```
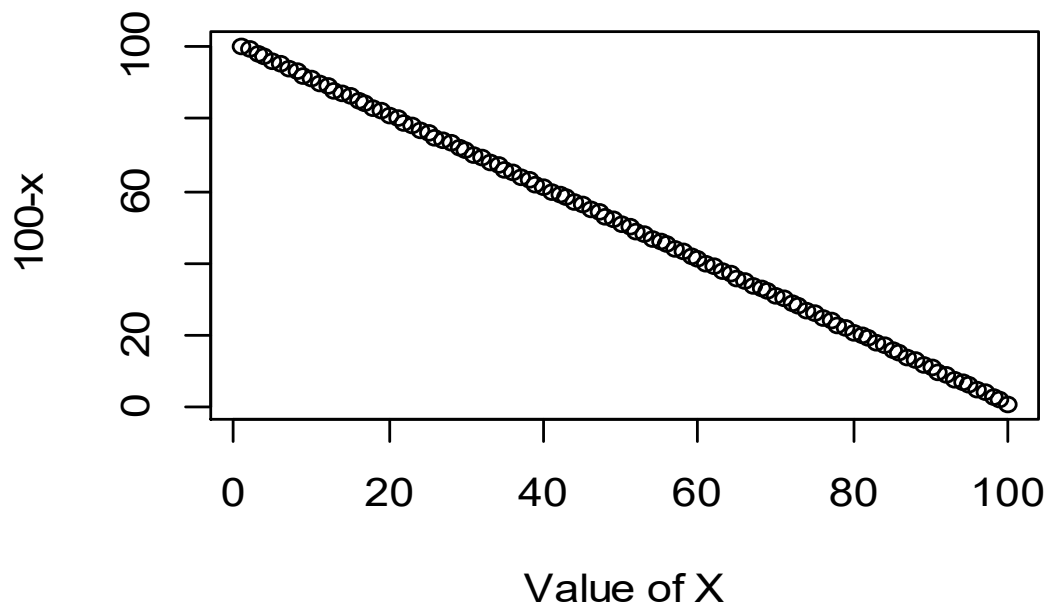

Relationship between x and its qube

```
#Explore relationship x + y = 101,
#y=101-x
x<- c(1:100)
y=c(101-x)
y
plot(x,y,  main = "Relationship between x and y", xlab = "Value of x", ylab =  "100-x" )
```

```
> #Explore relation ship x + y = 101, then y=101-x
> x<- c(1:100)
> y=c(101-x)
> y
  [1] 100  99  98  97  96  95  94  93  92  91  90  89  88  87  86  85  84  83  82  81  80  79  78  77  76  75
 [27]  74  73  72  71  70  69  68  67  66  65  64  63  62  61  60  59  58  57  56  55  54  53  52  51  50  49
 [53]  48  47  46  45  44  43  42  41  40  39  38  37  36  35  34  33  32  31  30  29  28  27  26  25  24  23
 [79]  22  21  20  19  18  17  16  15  14  13  12  11  10   9   8   7   6   5   4   3   2   1
> plot(x,y,  main = "Relationship between x and y", xlab = "Value of x", ylab =  "100-x" )
>
```

Relationship between x and y

```
#Explore relation ship xy = 500, then y=500/x
x<- c(1:100)
y=c(500/x)
y
plot(x,y,  main = "Relationship between x and 500/x", xlab = "Value of X", ylab =  "500/x" )
```

```
> #Explore relation ship xy = 500, then y=500/x
> x<- c(1:100)
> y=c(500/x)
> y
  [1] 500.000000 250.000000 166.666667 125.000000 100.000000  83.333333  71.428571  62.500000  55.555556
 [10]  50.000000  45.454545  41.666667  38.461538  35.714286  33.333333  31.250000  29.411765  27.777778
 [19]  26.315789  25.000000  23.809524  22.727273  21.739130  20.833333  20.000000  19.230769  18.518519
 [28]  17.857143  17.241379  16.666667  16.129032  15.625000  15.151515  14.705882  14.285714  13.888889
 [37]  13.513514  13.157895  12.820513  12.500000  12.195122  11.904762  11.627907  11.363636  11.111111
 [46]  10.869565  10.638298  10.416667  10.204082  10.000000   9.803922   9.615385   9.433962   9.259259
 [55]   9.090909   8.928571   8.771930   8.620690   8.474576   8.333333   8.196721   8.064516   7.936508
 [64]   7.812500   7.692308   7.575758   7.462687   7.352941   7.246377   7.142857   7.042254   6.944444
 [73]   6.849315   6.756757   6.666667   6.578947   6.493506   6.410256   6.329114   6.250000   6.172840
 [82]   6.097561   6.024096   5.952381   5.882353   5.813953   5.747126   5.681818   5.617978   5.555556
 [91]   5.494505   5.434783   5.376344   5.319149   5.263158   5.208333   5.154639   5.102041   5.050505
[100]   5.000000
> plot(x,y,  main = "Relationship between x and 500/x", xlab = "Value of X", ylab =  "500/x" )
>
```

Relationship between x and 500/x
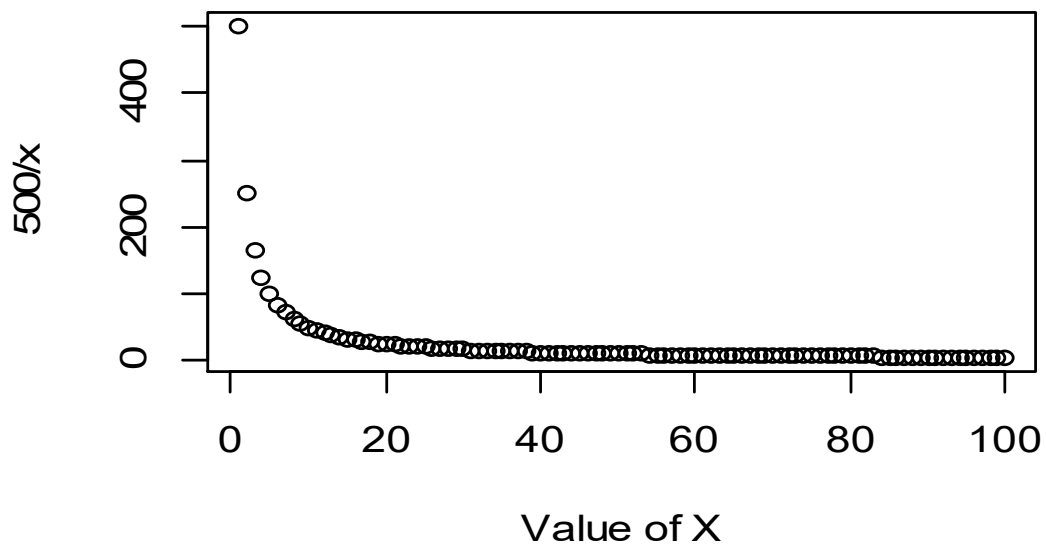
2. First we'll produce a very simple graph using the values in the car vector:
Define the cars vector with 5 values cars <- c(1, 3, 6, 4, 9)
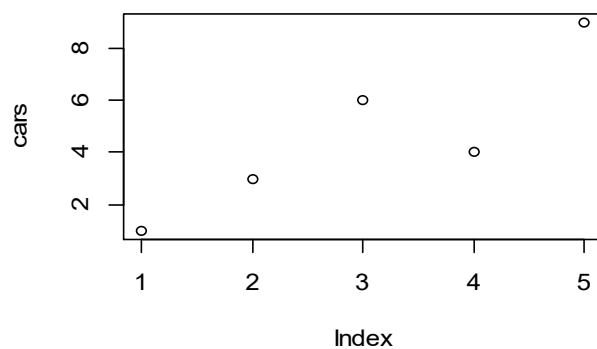# Graph the cars vector with all defaults plot(cars)
#Let's add a title, a line to connect the points, and some color:
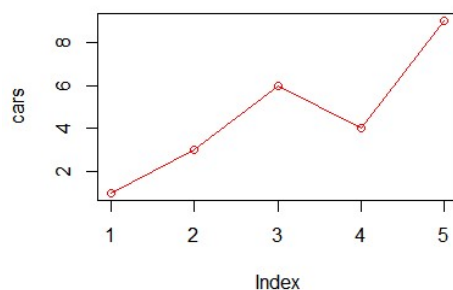# Define the cars vector with 5 values cars <- c(1, 3, 6, 4, 9)
Graph cars using blue points overlayed by a line plot(cars, type="o", col="blue")
Create a title with a red, bold/italic font title(main="Autos", col.main="red", font.main=4)

```
> #2. First we'll produce a very simple graph using the values in the car vector:
> # Define the cars vector with 5 values cars <- c(1, 3, 6, 4, 9)
> cars<- c(1,3,6,4,9)
> # Graph the cars vector with all defaults plot(cars)
> plot(cars)
>
```
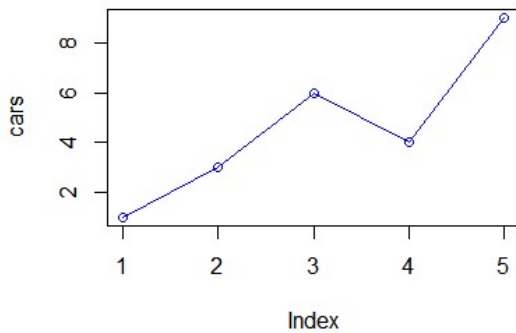


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> #Let's add a title, a line to connect the points, and some color:
> plot(cars, type = "o", col="red")
>
```

```
> # Define the cars vector with 5 values cars <- c(1, 3, 6, 4, 9)
> cars <- c(1, 3, 6, 4, 9)
> # Graph cars using blue points overlayed by a line plot(cars, type="o", col="blue")
> plot(cars, type="o", col="blue")
>
```
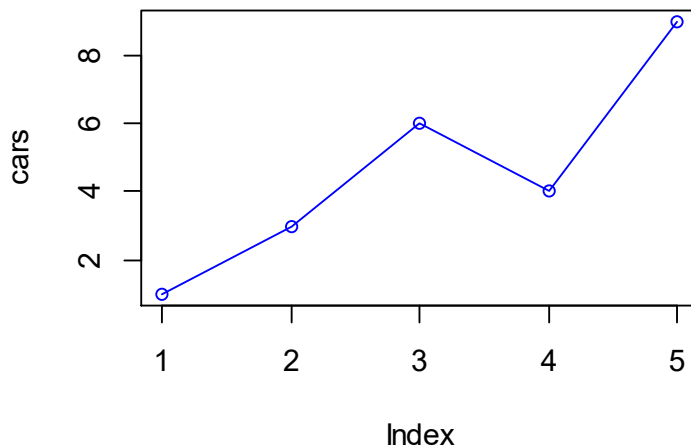


```
> # Create a title with a red, bold/italic font title(main="Autos", col.main="red", font.main=4)
> title(main="Autos", col.main="red", font.main=4)
>
```
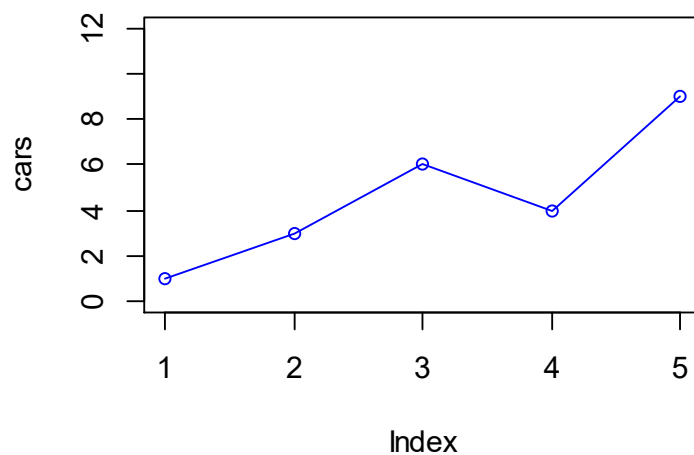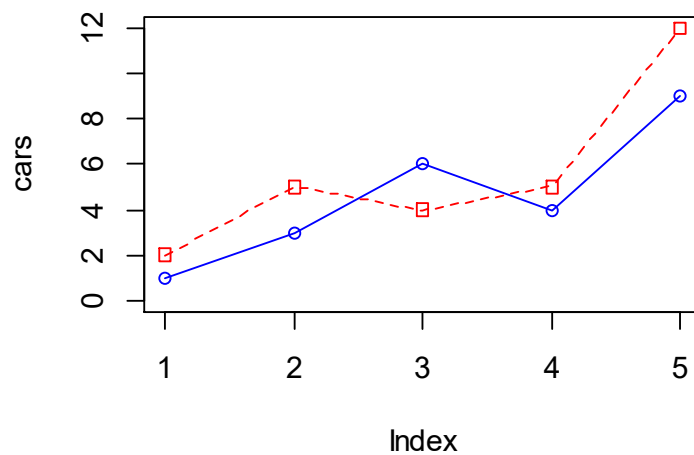
Autos


```
# Define 2 vectors
cars <- c(1, 3, 6, 4, 9)
trucks <- c(2, 5, 4, 5, 12)
# Graph cars using a y axis that ranges from 0 to 12
plot(cars, type="o", col="blue", ylim=c(0,12))
# Graph trucks with red dashed line and square points
lines(trucks, type="o", pch=22, lty=2, col="red")
# Create a title with a red, bold/italic font
title(main="Autos", col.main="red", font.main=4)
```

```
> # Define 2 vectors
> cars <- c(1, 3, 6, 4, 9)
> trucks <- c(2, 5, 4, 5, 12)
> # Graph cars using a y axis that ranges from 0 to 12
> plot(cars, type="o", col="blue", ylim=c(0,12))
>
```



```
> # Graph trucks with red dashed line and square points
> lines(trucks, type="o", pch=22, lty=2, col="red")
>
```

```
> # Create a title with a red, bold/italic font
> title(main="Autos", col.main="red", font.main=4)
>
```

Autos