# HW3_Q2

Q15 in Section 4.8 of ISLR

##15a. Write a function, Power(), that prints out the result of raising 2 ##to the 3rd power. Use the print() function to output the result.

```
Power <- function() {
    2^3
  }

print(Power())
```

```
## [1] 8
```

##15b. Create a new function, Power2(), that allows you to pass any ##two numbers, x and a, and prints out the value of x^a

```
Power2 <- function(x, a){
  x^a
}
Power2(3,8)
```

```
## [1] 6561
```

##15c. Using the Power2() function that you just wrote, compute 103, ##817, and 1313

```
Power2(10,3)
```

```
## [1] 1000
```

```
Power2(8,17)
```

```
## [1] 2.2518e+15
```

```
Power2(131,3)
```

```
## [1] 2248091
```

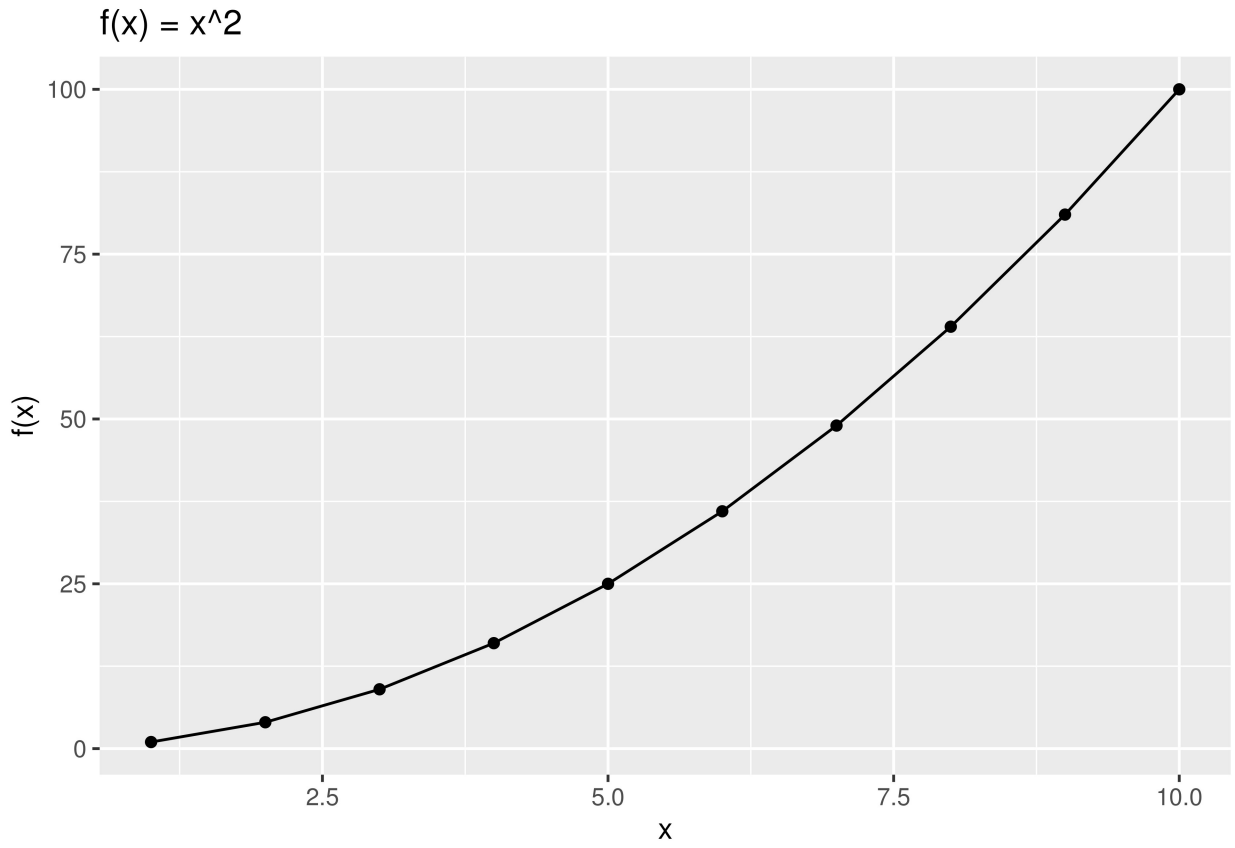
##15d. Now create a new function, Power3(), that actually returns the ##result x^a as an R object

```
Power3 <- function(x, a){
  res <- x^a
  return(res)
}
Power3(3,8)
```

```
## [1] 6561
```

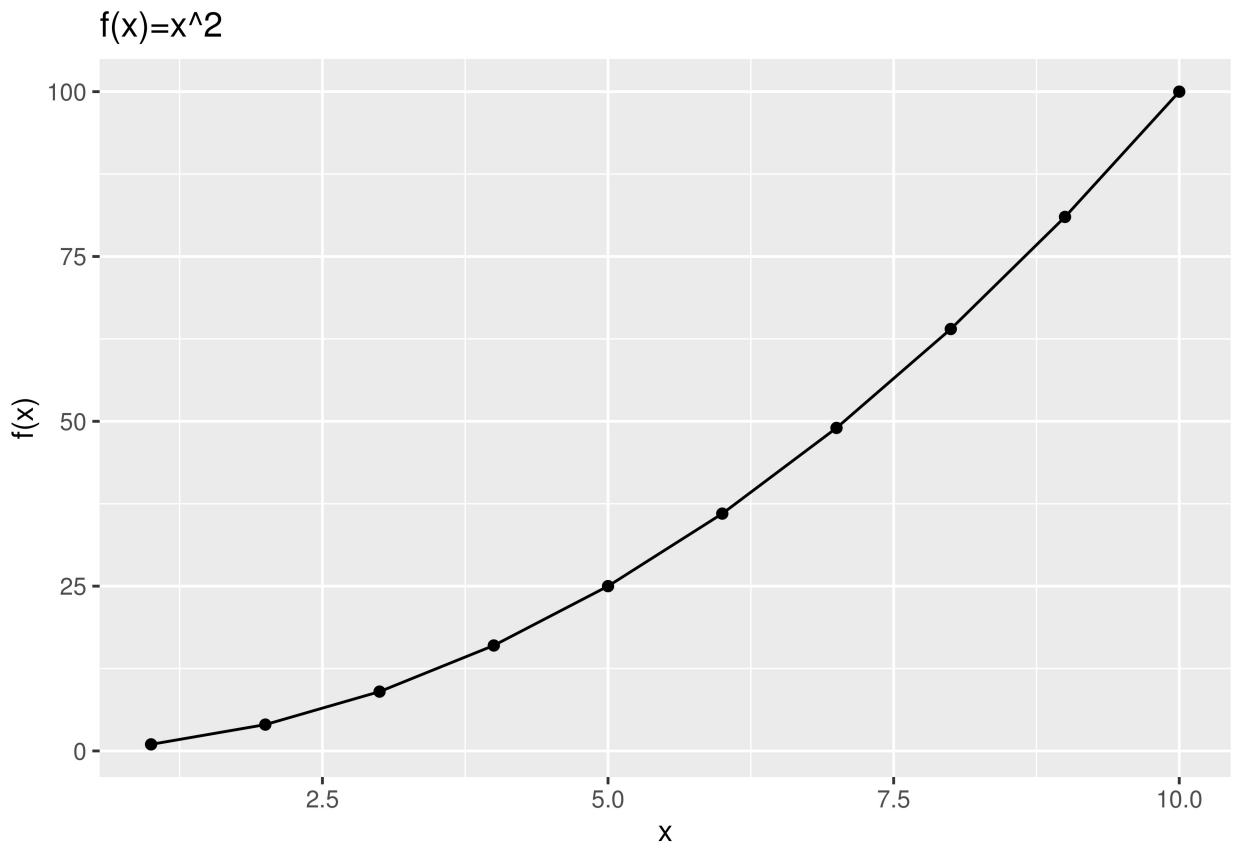
##15e. using the Power3() function, create a plot of f(x) = x2. ##The x-axis should display a range of integers from 1 to 10, and ##the y-axis should display x2. Label, title, consider log-scale

```
x <-  1:10
ggplot(data.frame(x=x, y = Power3(x, 2)), aes(x = x, y = y)) +
  geom_line() + geom_point() + xlab("x") + ylab("f(x)") +
  ggtitle("f(x) = x^2")
```




##15f. Create a function, PlotPower(), that allows you to create a plot ##of x against x^a for a fixed a and for a range of values of x

```
PlotPower <- function(x,a){
ggplot(data.frame(x=x, y = Power3(x, 2)), aes(x = x, y = y)) +
  geom_line() + geom_point() + labs(x = "x", y = "f(x)",
                                    title = "f(x)=x^2")
}
PlotPower(1:10, 3)
```


f(x)=x^2
100
75
50
25
0
f(x)
2.5
5.0
7.5
10.0
x