Problem 1

Write a function, F(x), which takes x as the input parameter. It calculates and prints the value of the following mathematical function.

$$f(x)=\begin{cases}\dfrac{5}{(x-1)^2}, x<1\\ 2, x=1\\ \dfrac{5}{(x-1)^3}, x>1\end{cases}$$

Testing commands: F(1); F(10); F(0.3);

Problem 2

The Fibonacci sequence 1, 1, 2, 3, 5, 8, 13, 21…… starts with two 1s, and each term afterwards is the sum of its two predecessors. Please write a function, Fib(n), which takes n as the input parameter. It will return the n-th number in the Fibonacci sequence.

Testing commands: Fib(1); Fib(2); Fib(100)

1. Use loop
2. Use recursion

Problem 3

Define zz=matrix(c(c(1,2,NA), c(3,4,5), 6:9), nrow = 2, ncol = 5, byrow = TRUE). Use two apply() function to compute the sum of each row and the average of each column(ignore any missing value). Write your R code followed by the results.

Problem 4

Use one apply function to find the highest salary of male and female

```
salary <- data.frame(name=c("Kay","Dave","Jon","Jenny","Jim","Eve","Ed"),
                     salary=c(60000, 100000, 50000, 80000, 30000, 40000, 20000),
                     gender=factor(c("F","M","M","F","M","F","M")))
```