Recursion - when a function call itself again and again.

n-th multiple indexing : (n)(n+1)/2

for n=1 → fun(n)

for n=1, fun=10(2n+1) → differentiation

for n=n, fun=(n+1)(2n)/2.

1+2+3+4+5 ..... +(n+1) = (n)(n+1)/2.

(n)(n+1) = (n)(n) + n*1

(n+1)(n+2) = n*1 + 2*1

n*1 = 2*1.

Recursion: differentiation function already made.

f(3) → 3, 2, 1

```
public static void fun(int n){
    if(n==0){
        return;
    }
    fun(n-1);
    fun(n-1);
}
```

f(3) =
3
2
1

→ fun(3) → fun(2) → fun(1) → fun(0)

Stack out of memory.

1. fun(1)
2. fun(2)
3. fun(3)

1. fun(1)
2. fun(2)
3. fun(3)

1. fun(1)
2. fun(2)
3. fun(3)