Recursive functions:

1. Write a function that calculates the n^{th} Fibonacci number without using any type of loop.

2. Write a function that determine if a number is a prime number without using any type of loop.

Solution:

(1)

```
def fib(n)
    if n < 2:
        return
    else:
        return fib(n - 1) + fib(n - 2);
```

(2)

```
def prime(n, i):
    if (n <= 2):
        return True

  if (n % i == 0):
      return False
  if (i * i > n):
      return True

  return prime(n, i + 1)
```