CS2302 - Data Structures - Fall 2020

Exercise - Analyzing Loops

Let n be the length of the array a that each of the following functions receives as an argument. Determine the big-O running time with respect to n of each of the following functions:

```
def p0(a):
    for i in range(len(a)):
        print(a[i])
    print()

def p1(a):
    print(a)

def p2(a):
    for i in a:
        print(i)
    print()

def p3(a):
    for i in a:
        for j in a:
            print(i,j)
    print()

def p4(a):
    for i in range(len(a)):
        p1(a)

def p5(a):
    for i in range(len(a)):
        p3(a)

def p6(a):
    for i in range(len(a)):
        p5(a)

def p7(a):
    i  = len(a)-1
    while i>=0:
        print(a[i])
        i -= 1

def p8(a):
    i  = len(a)-1
    while i>=0:
        print(a[i])
        i -= 2

def p9(a):
    i  = len(a)-1
    while i>=0:
        p1(a)
        i -=1

def p10(a):
    i  = len(a)-1
    while i>0:
        print(a[i])
        i = i//2
```

```
def p11(a):
    i  = 1
    while i<len(a):
        print(a[i-1])
        i = i*2

def p12(a):
    i  = 1
    while i<len(a):
        print(a[i-1])
        p1(a)
        i = i*2

def p13(a):
    i  = 1
    while i<len(a):
        print(a)
        i = i*2

def p14(a):
   p1(a)
   p10(a)

def p15(a):
   p6(a)
   for b in a:
       p10(a)

def p16(a):
   p1(a)
   for b in a:
       p11(a)

def p17(a):
   print(a[:2302])

def p18(a):
    i  = 1
    while i<len(a):
        p3(a)
        i = i*2
        p1(a)

def p19(a):
    i  = 1
    while i<len(a):
        p10(a)
        i = i*2
        p1(a)
```