1. Función Algoritmos(n)

```
Cont                          } 1 asignación
for j                         } 1 asignación
    S                         } 1 asignación
While S ≥ 1 do                } log(n) (*)
        S ← S/2
    end while
end for
return S
```

nlogn

nlogn + 1

$T(n) = O(n \log n) + O(1)$

$T(n) = O(n \log n)$

$2n / 2^k < 1$

$2n < 2^k$

$\log(2n) < k$

$\log_2(2) + \log_2(n) = 1 + \log_2(n)$

$= O(\log n)$

2. $T(n) = 2T(n/2) + n \quad ; \quad T(1) = 1$

$T(n) = n + 2T(n/2)$

$T(n) = n + 2\left(\frac{n}{2} + 2T\left(\frac{n}{4}\right)\right)$

$T(n) = n + n + 4\left(\frac{n}{4} + 2T\left(\frac{n}{8}\right)\right)$

$T(n) = n + n + n + 8T\left(\frac{n}{8}\right)$

$T(n) = kn + 2^k T\left(\frac{n}{2^k}\right)$

$T(n) = n \log_2 n + 2^{\log n} T(1)$

$T(n) = O(n \log n) + O(n) = O(n \log n)$

* $n / 2^k = 1$

$n = 2^k$

$\log_2 n = k$