1、9-6-1-5-4-2-3-8-7

2、(1) $10^6 \times 60 = 6\times 10^7$

(2) 3×10^7

(3) 2×10^7

(4) $(6/n)\times 10^7$

(5) 3×10^7

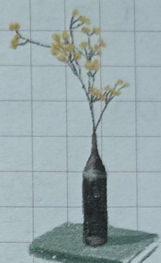
(6) 3×10^7

(7) $(6/n)\times 10^7$

(8) 3×10^7

(9) 6×10^5

(10) $(6/n)\times 10^7$



3、3.1A.

(1) $g(n) = O(f(n))$

(2) $g(n) = O(f(n))$

(3) $g(n) = O(f(n))$

(4) $g(n) = O(f(n))$

(5) $g(n) = O(f(n))$, $f(n) = O(g(n))$

(6) $g(n) = O(f(n))$

(7) $f(n) = O(g(n))$

3.2 B $\underset{\sim}{f(n) \le c \cdot g(n)} \quad n > N$

$2\log(n) \le c \cdot \log(n)$

$c \ge 2$

$c = 3 \quad N = 1$

4.
```
def cal(n):                      C1=1
    sum=0                        C2=1
    for m in range(1,n+1):       C3=n
        sum += 1/k               C4=n
    return sum                   C5=1
```

$O(f(n)) = O(n)$

(because complexity basically relate to n)

5.
```
def calculate(n):                      C1=1
    return n·calculate(n-1)            C2=n
```

$O(f(n)) = O(n)$

(because complexity basically relate to n)

6. Bubble Sort:

Input: a list A C_1

for i = 1 to A.length − 1 do C_2

    for j = A.length down to i+1 do C_3

        if A[j] < A[j−1] then C_4

            exchange A[j] with A[j−1] C_5

$C_1 = 1$

$C_2 = n$

$C_3 = \Sigma(n-1-i),\ i \in (1, n)$

$C_4 = \Sigma(n-1-i),\ i \in (1, n)$

$C_5 = \Sigma(n-1-i),\ i \in (1, n)$

$O(f(n) = O(n^2)$

(Because Arithmetic Series Sum Formula)

7. Algorithm 2:

$C_1=1 \quad C_2=1 \quad C_3=1 \quad C_4=n+1$

$C_5=n \quad C_6=n$

$\cancel{O(n)=} \; O(f(n))=O(n)$

Algorithm 3:

$C_1=1 \quad C_2=1 \quad C_3=1 \quad C_4=n+1 \quad C_5=n+1$

$C_6=(n+1)^2 \quad C_7=(n+1)^2 \quad C_8=(n+1)^2 \quad C_9=n+1$

$O(f(n))=O(n^2)$

Algorithm 4:

$C_1=C_2=C_3=1 \quad C_4=n+1 \quad C_5=1 \quad C_6=n^3+n$

$C_7=C_8=n^3 \quad C_9=n$

$O(f(n))=O(n^3)$

Algorithm r:

$C_1 = C_2 = C_3 = 1 \quad C_4 = n+1 \quad C_5 = n = C_6 \quad C_7 = n-1$

$C_8 = n$

$O(f(n)) = O(n)$

Algorithm b:

$C_1 = C_2 = C_3 = 1 \quad C_4 = n+1 \quad C_5 = n$

$C_6 = \sum i \ (i \in (0,n)) = C_7$

$C_8 = \sum i \times (\sum i - 1),\ i \in (0,n) = C_9 = C_{10}$

$C_{11} = \sum i \ (i \in (0,n))$

$C_{12} = n$

$O(f(n)) = O(n^4)$