Assignment 1: Algorithm Analysis

Question 1:

1. f(n)=O(g(n));
2. f(n)=Ω(g(n));
3. f(n)=Θ(g(n));
4. f(n)=O(g(n));
5. f(n)=Ω(g(n));

Question 2:

(a)T(n) = 2\*n+1 = 2n+1 = O(n);

(b)T(n) = 2\*n\*(n\*n)=2n^3 = O(n^3);

(c)T(n)=(2)\*1/2n^2 = O(n^2);

(d)T(n) = 2\*1/2n^3 = O(n^3);

(e)T(n)=2\*1/2n^2= O(n^2);

Question 3:

void fun(int n)

f

if (n \_ 1) =1

return;

fun(n 􀀀 1); =n-1

for (i = 0; i < n; i++) =\*n

cout << \ \* ";

}

T(n) = 1+(n-1)\*n =1+n^2-n= O(n^2);

Question 4:

(a)

For (j=0,j<n,++j){ =n

Min = j;

for(i=j,i<n,++i){ =n

if ( min >A[i])

min = i;

swap A[i] and A [j];

}

(b) O(n^2)

(c) O(n^2)

Question 7:

(a)11822.6 centuries

(b)9.9\*10^274 centuries