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1.

a) 0.001 n3 , O(n3)

b)100 n1.5 ,O(n1.5)

c)2.5n1.75 ,O(n1.75)

d) n2 log2(n) ,O(n2 log2(n))

e)nlog2(n),O(nlog2(n))

f)3log8(n),O(log8(n))

g)0.01n2,O(n2)

h)100n2, O(n2)

i) 0.5n1.25,O(n1.25)

j)n(log2n)2,O(n(log2n)2)

k)n3,O(n3)

l)0.003log4(n),O(log4(n))

2.

a) True

b)True

c)False, if g=O(f) and f=O(h),then g=O(h)

d)Tru

e)False,it is O(n3) or it can be of higher than O(n3).

3.

Second algorithm is better in Big-Oh sense.If n>=1025,then second one out performs first one.

But in the case of n<=109,then first one will be better .Because,TA(n) has lesser value when n<=109.

4.

Total steps for this segment is n3 + n2 logn.

So,in Big-oh sense,it is O(n3).

5.

Here,the third loop runs n/2 times.It can be counted as n times in Big-Oh sense.Forth loop runs logn times.

For first loop,the values of ‘bound’ can be 1,2,4,8,....,2floor(log(n))

So,in total,second loop run 1+2+4+....+2floor(log(n)) times,which equals to 21+floor(log(n)) ,roughly n times.

So,overall complexity of this segment is O( n\*(n+log(n))),which is O(n2) .

So the answer is O(n2 ).