

**Solution**

1. Algorithm A =  $T(n) \leq 5T(n/2) + O(n) = O(n \log n)$
2. Algorithm B =  $T(n) \leq 2T(n-1) + c = O(n)$
3. Algorithm C =  $T(n) \leq 9T(n/3) + O(n^2) = O(n \log n^2)$

I would choose Algorithm A, because it cuts the problem size in half 5 times, rather than B, which only reduces the size by 1, and it combines the results in linear time, rather than C, which combines them in  $O(n^2)$  time.