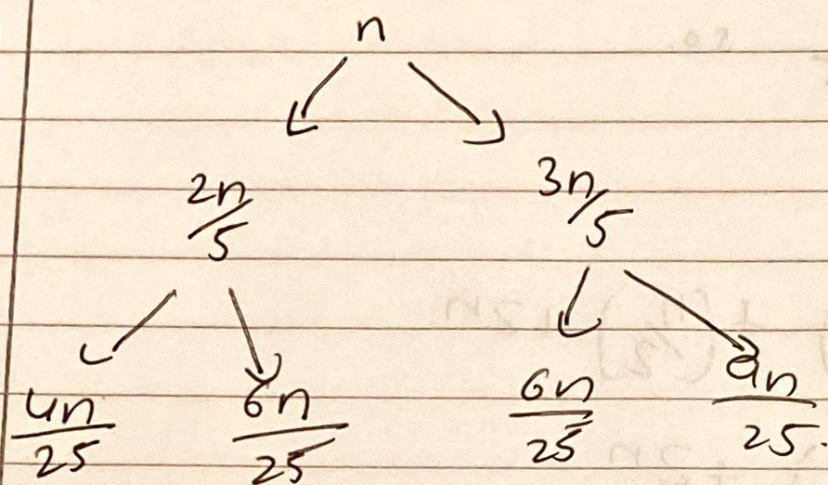


d) This would depend on the type of array I have. If the array is already sorted, I would have a large value of k so only insertion sort is applied.

If the array is unsorted, I would choose the value of k to be 1 as this way just the ~~more~~ the complexity would be ^{just} $O(n \log n)$.

e)



lower bound (left most path)

$$\therefore h = \log_{5/2} n.$$

Upper bound (right most path)

$$h = \log_{5/3} n.$$

$$\therefore \text{lower bound} = n \log_{5/2} n.$$

$$\therefore \text{upper bound} = n \log_{5/3} n.$$

Since these bounds only differ by a constant factor we can disregard.

$$T(n) = \Theta(n \log n).$$