MPSS mid recursion

Step	Size	Tree
0	n	$n \log n$
1	$n/2$	$\frac{n}{2}\log(\frac{n}{2})$
2	$n/4$	$\frac{n}{4}\log(\frac{n}{4})$
⋮	⋮	⋮
k	1	$\Theta(1)$

n ↑ Filling left and right

$n \log n$ ↑ sorting

$+ n$ ↑ determining mpssMid

$1 = \frac{n}{2^k}$

$k = \log n$

$$\sum_{i=0}^{K-1} \frac{n}{2^i}(\log(\frac{n}{2^i})) + \cancel{K}$$

↳ $\log n - \log 2^i$

$i \cancel{\log 2}$

$$n \sum_{i=0}^{K-1} \frac{1}{2^i}(\log n - i)$$

$$n\left[\sum_{i=n}^{K-1} \frac{1}{2^i}\right]\left[\sum_{i=0}^{K-1}(\log n - i)\right]$$

$$n\left[\frac{2-1}{2^K-1}\right]\left[\log n - \frac{(K-1)(K)}{2}\right]$$

$$n\left[\frac{1}{\cancel{2^{\log n}}-1}\right]\left[\log n - \frac{(\log n - 1)(\log n)}{2}\right]$$

n · constant

$O(n \log^2 n)$