

$A[1..2m]$

$O(m \log m)$

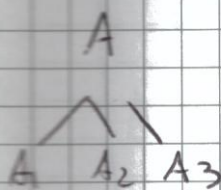
x, y evn $x \leq y$ d: $y - x \in \text{max}$

$\log_3 2$

$$\sqrt[2]{2} = \sqrt[3]{3}^{\log_3 2}$$

$$= \log_3 2$$

no



$m = 1, 3, 6, 9, 12, \dots$

$m \equiv 0 \pmod 3$

MERGESORT $(A[1..m])$

IF $|A| = 1$ return A else

$A_1 = \text{MERGESORT}(A[1..m/3])$

$A_2 = \text{MERGESORT}(A[m/3+1..2(m/3)])$

$A_3 = \text{MERGESORT}(A[2(m/3)+1..m])$

$B = \text{MERGE}(A_1, A_2)$

$C = \text{MERGE}(B, A_3);$

RETURN C ;

$$T(m) = \begin{cases} c & \text{if } m=1 \\ 3T(m/3) + 2m & \text{otherwise} \end{cases} \Rightarrow T(m) = O(m \log m)$$

$a = 3$ $b = 3$ $k = 1$

$$a \geq e^k$$

$O(m \log m)$