

Algorithm Design
M. T. Goodrich and R. Tamassia
John Wiley & Sons
Solution of Exercise C-1.23

For convenience assume that n is even. Then

$$\sum_{i=1}^n \log_2 i / \text{geq} \sum_{i=\frac{n}{2}+1}^n \log_2 \frac{n}{2} = \frac{n}{2} \log_2 \frac{n}{2},$$

which is $\Omega(n \log n)$.