

Carilah kompleksitas waktu $T(n)$ dari 10 soal di bawah ini **menggunakan Master Theorem!**

1. $T(n) = 2T(n/2) + n$

2. $T(n) = 4T(n/2) + n^2$

3. $T(n) = 3T(n/4) + n \log n$

4. $T(n) = 5T(n/5) + n$

5. $T(n) = 6T(n/3) + n^2$

6. $T(n) = 2T(n/3) + n$

7. $T(n) = 8T(n/2) + n^3$

8. $T(n) = 3T(n/3) + n^2 \log n$

9. $T(n) = 7T(n/2) + n \log n$

10. $T(n) = 3T(n/3) + n^2$

Master Theorem

$$T(n) = aT(n/b) + f(n)$$

Jika $f(n) \in \Theta(n^k \log^p n)$, asumsi $k \geq 0$, maka

$$T(n) = \begin{cases} \Theta(n^k) & , a < b^k \text{ dan } p < 0 \\ \Theta(n^k * \log^p n) & , a < b^k \text{ dan } p \geq 0 \\ \Theta(n^{\log_b a} * \log^{p+1} n) & , a = b^k \text{ dan } p > -1 \\ \Theta(n^{\log_b a} * \log \log n) & , a = b^k \text{ dan } p = -1 \\ \Theta(n^{\log_b a}) & , a = b^k \text{ dan } p < -1 \\ \Theta(n^{\log_b a}) & , a > b^k \end{cases}$$