



# Master theorem (reprise)

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

**CASE 1:**  $f(n) = O(n^{\log_b a - \varepsilon})$ , constant  $\varepsilon > 0$

$$\Rightarrow T(n) = \Theta(n^{\log_b a}) .$$

**CASE 2:**  $f(n) = \Theta(n^{\log_b a} \lg^k n)$ , constant  $k \geq 0$

$$\Rightarrow T(n) = \Theta(n^{\log_b a} \lg^{k+1} n) .$$

**CASE 3:**  $f(n) = \Omega(n^{\log_b a + \varepsilon})$ , constant  $\varepsilon > 0$ ,

and regularity condition

$$\Rightarrow T(n) = \Theta(f(n)) .$$