Master theorem

$T(n) = aT(n/b) + f(n)$, where $a \geq 1$, $b > 1$ & $f(n) = \theta(n^k log^p n)$

- **Case 1:** if $log_b a > k$, then $T(n) = \theta(n^{log_b a})$
- **Case 2:** if $log\ a = k$,then
  - **2.1** if $p > -1$, $T(n) = \theta(n^k log^{p+1} n)$
  - **2.2** if $p = -1$, $T(n) = \theta(n^k log\ log\ n)$
  - **2.3** if $p < -1$, $T(n) = \theta(n^k)$
- **Case 3:** if $log_b a < k$, then
  - **3.1** if $p \geq 0$, $T(n) = \theta(n^k log^p n)$
  - **3.2** if $p < 0$, $T(n) = \theta(n^k)$