



# Three common cases

Compare  $f(n)$  with  $n^{\log_b a}$ :

1.  $f(n) = O(n^{\log_b a - \varepsilon})$  for some constant  $\varepsilon > 0$ .

- $f(n)$  grows polynomially slower than  $n^{\log_b a}$  (by an  $n^\varepsilon$  factor).

**Solution:**  $T(n) = \Theta(n^{\log_b a})$ .

2.  $f(n) = \Theta(n^{\log_b a} \lg^k n)$  for some constant  $k \geq 0$ .

- $f(n)$  and  $n^{\log_b a}$  grow at similar rates.

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