

③  $f(n) = 5bn + 10bn$   $b > a$

$g(n) = a \cdot (n \log_2 n) + b$

seja  $b=2, a=1$

$$\begin{array}{l|l} 5bn + 10bn & a(n \log_2 n) + b \\ \hline 10n + 20n & n \log_2 n + 2 \\ 30n & n \log_2 n + \cancel{2} \end{array}$$

$\rightarrow$  reduzindo  
p/ simplificar

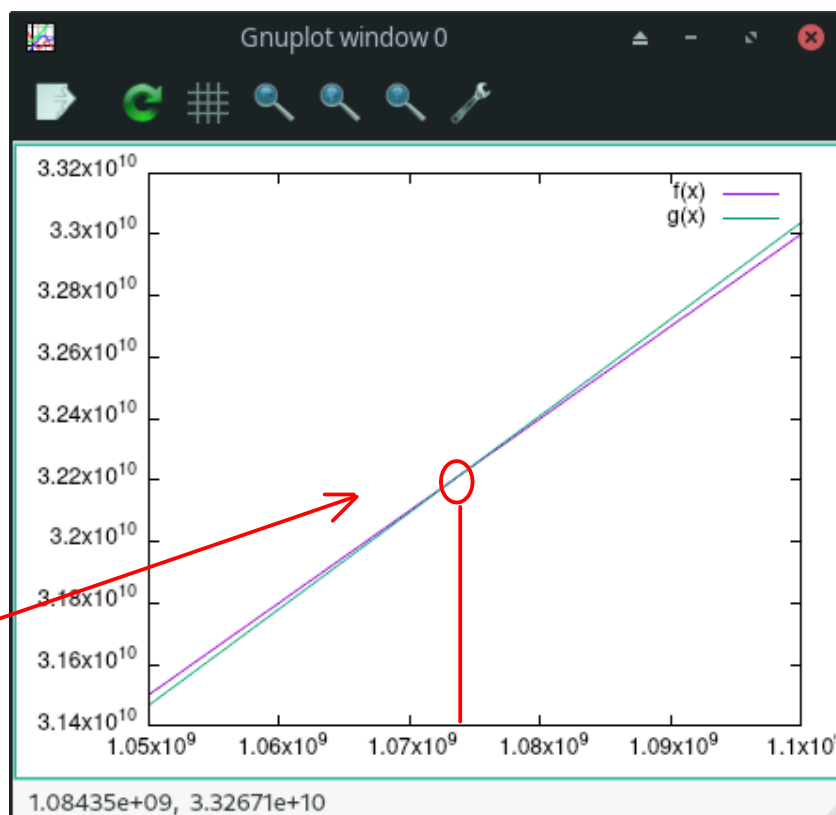
apesar da menor constante,  $g(n) > f(n)$   
a partir de um determinado valor.

$$\frac{30n}{n} = \frac{n \log_2 n}{n}$$

$$30 = \log_2 n$$

$$2^{30} = 2^{\log_2 n}$$

$n = 1.073.741.824$



④ Counting Sort  $f(n) = (K+n)$

• long int 8 bytes / 4 = 2 bytes

$$2^{16} = 65536$$

$$\text{Radix } f(n) = (65536+n) \times 8 \\ = 8n + 524288$$

$f(n) \in \Theta(n)$

$$c_1 n \leq 8n + 524288 \leq c_2 n$$

$$c_1 \leq 8 + \frac{524288}{n}$$

$$c_1 = 8 \quad n_0 = 1$$

$$8n + 524288 \leq c_2 n$$

$$8 + \frac{524288}{n} \leq c_2$$

$$c_1 / n_0 = 1$$

$$524296 \leq c_2$$

$$c_2 = 524297$$

$f(n) \in \Theta(n)$

$$\text{com } c_1 = 8, c_2 = 524297, n_0 = 1$$

⑦ Tabela  $m=13$

0	1	2	3	4	5	6	7	8	9	10	11	12

i)  $h(k) = (k+i) \% m$