



Constant  
 $\Theta(1)$

?  
 $22 = 300$

Exponential!

Polynomial

$g \in O(f) \rightarrow \frac{6+20n}{1+2n}$   
 $C=2, n_0=0$   
 $f \in O(n)$   
 $p = \frac{1}{2} + \frac{1}{2} \log n$   
 complexity class  
 $\Theta(f)$   
 $f \in O(g)$   
 iff  $f \in O(g)$  and  $f \in \Omega(g)$   
 Lower Bound  
 $f \in \Omega(g)$   
 $\exists c, n_0, n \geq n_0 \rightarrow f(n) \geq cg(n)$   
 Discrete Math  
 Algorithms  
 Divide + Conquer  
 $n^2 > n \log n$

$\Theta(n)$

Complexity  
 $n^2$   
 $M$   
 $n$   
 $n \in O(n^3)$   
 $n \in \Omega(\log n)$   
 $n \in \Omega(\frac{n^2}{2})$   
 $n \in \Omega(\frac{n(n-1)}{2})$   
 Bubble Sort  
 $n^2$   
 $n(n-1)/2$

P = NP