

Problem 1. [20 points] Asymptotic notation

For each function $f(n)$ along the left side of the table, and for each function $g(n)$ across the top, write O , Ω , or Θ in the appropriate space, depending on whether $f(n) = O(g(n))$, $f(n) = \Omega(g(n))$, or $f(n) = \Theta(g(n))$. If more than one such relation holds between $f(n)$ and $g(n)$, write only the strongest one. The first row is a demo solution for $f(n) = n^2$.

		$g(n)$			
		$n \log n$	$\log(n^{0.1})$	$\log(\log(n!))$	$2^{\sqrt{n}}$
$f(n)$	n	O	Ω	Ω	O
	$n^{1.1}$	Ω	Ω	Ω	O
	$\sqrt{2^n}$	Ω	Ω	Ω	Ω
	$n \log_{30} n$	Θ	Ω	Ω	O
	$\log(n/\log n)$	O	Θ	Θ	O
	$\binom{2n}{n}$	Ω	Ω	Ω	Ω