

Assignment 2

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1 Introduction

Exercise 1:

Problem a

$$(4n + 1)4^{\log(n)} = \Theta(n^3)$$

Problem b

$$t_1(n) = (n^2 + n), t_2(n) = (n^2)$$

$$t_1(n) = \Theta(n^2)$$

$$t_2(n) = \Theta(n^2)$$

$$t_1(n) - t_2(n) = o(n^2)$$

Problem c

$$t_3(n) = (2^n)$$

Problem d

$$t_4(n) = (n^2)$$

Exercise 2:

A	B	O	o	Ω	ω	Θ
$lg^k n$	n^ϵ	yes	yes	no	no	no
n^k	c^n	yes	yes	no	no	no
\sqrt{n}	$n^{\sin n}$	no	no	no	no	no
2^n	$2^{n/2}$	no	no	yes	yes	no
$n^{lg c}$	$c^{lg n}$	yes	no	yes	no	yes
$lg(n!)$	$lg(n^n)$	yes	no	yes	no	yes