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Lista 7

1) a. $T(n) = 4T(n/2) + n$

$a = 4$ ✓
$b = 2$ ✓
$f(n) = n$ ✓

$n^{\log_2 4} = n^2$
$n^2 > n$
$T(n) = O(n^2)$ /

b. $T(n) = 4T(n/2) + n^2$

$a = 4$ ✓
$b = 2$ ✓
$f(n) = n^2$ ✓

$n^{\log_2 4} = n^2$
$n^2 = n^2$
$T(n) = O(n^2 \lg n)$ /

c. $T(n) = 4T(n/2) + n^3$

$a = 4$ ✓
$b = 2$ ✓
$f(n) = f(n)$ ✓

$n^{\log_2 4} = n^2$
$n^2 < n^3$
$T(n) = O(n^3)$ /

d. $T(n) = 2T(n/2) + \Theta(n)$

$a = 2$ ✓
$b = 2$ ✓
$f(n) = n$ ✓

$n^{\log_2 2} = n$
$n = n$
$T(n) = O(n \lg n)$

e. $8T(n/2) + \Theta(n^2)$

$a = 8$
$b = 2$
$f(n) = n^2$

$n^{\log_2 8} = n^3$
$n^3 > n^2$
$T(n) = O(n^3)$ /

f. $7T(n/2) + \Theta(n^2)$

$a = 7$ ✓
$b = 2$ ✓
$f(n) = n^2$ ✓

$n^{\log_2 7} = n^{\approx 2,8}$
$n^{\approx 2,8} > n^2$
$T(n) = O(n^{\log_2 7})$ /