Master Theorem

1/1 point (100%)

Practice Quiz, 1 question

1 / 1 points

1.

Mark **all** the correct statements.

- [x] If $T(n) = 8T(n/2) + O(n^2)$ then $T(n) = O(n^4)$.

Correct

Yes, $T(n) = O(n^4)$: from the Master theorem, we know that $T(n)$ grows no faster than $n^{\log_2 8} = n^3$. At the same time, n^3 grows slower than n^4 and hence $T(n) = O(n^3)$ and $T(n) = O(n^4)$.

- [x] If $T(n) = T(n/2) + O(1)$ then $T(n) = O(\log n)$.

Correct

Yes, $T(n) = O(\log n)$: this is the running time of the binary search algorithm and a recurrence relation it satisfies.

- [ ] If $T(n) = 3T(n/2) + O(n)$ then $T(n) = O(n)$.

Un-selected is correct