

# Master Theorem

**1/1 point (100%)**

Quiz, 1 question

**✓ Congratulations! You passed!**

Next Item

1 / 1  
points

1.

Mark **all** the correct statements.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**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  $T(n) = O(n^4)$ .



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