

# Quiz 2

**Due** Jan 21 at 11:59pm

**Points** 8

**Questions** 8

**Available** Jan 12 at 11:59pm - Jan 21 at 11:59pm 9 days

**Time Limit** 15 Minutes

**Allowed Attempts** 2

## Attempt History

	Attempt	Time	Score
KEPT	<a href="#">Attempt 2</a>	7 minutes	8 out of 8
LATEST	<a href="#">Attempt 2</a>	7 minutes	8 out of 8
	<a href="#">Attempt 1</a>	15 minutes	7 out of 8

Score for this attempt: **8** out of 8

Submitted Jan 21 at 5:53pm

This attempt took 7 minutes.

### Question 1

1 / 1 pts

What can a recurrence represent?

☐ A recursive function that recurses on itself.

☐ A divide and conquer solution for a problem.

☐ An equation or inequality that describes a function in terms of its value on smaller inputs.

Correct!

☒ All of the above.

### Question 2

1 / 1 pts

What methods does the textbook present for solving recurrences?

- ☐ The substitution method, Iterative functions, recursion tree
- ☐ Recursion tree, Induction, Master theorem
- ☒ Master theorem, The substitution method, Recursion tree
- ☐ Iterative functions, Recursion tree, Master theorem

Correct!

### Question 3

1 / 1 pts

Which one of the following can represent an application of the substitution method?

- ☐ Substitute some small values, guess the solution and prove by mathematical induction.
- ☐ Make a guess using recursion trees and prove by mathematical induction.
- ☐ Use back substitution to make a guess and then prove by mathematical induction.

Correct!

- ☒ All of the above.

### Question 4

1 / 1 pts

Using back substitution, what would be a guess for  $T(n) = T(n-1) + n$  ?

Correct!

- ☒  $O(n^2)$  where  $n^2$  means  $n$  to the 2
- ☐  $O(n \cdot \log n)$
- ☐  $O(n)$
- ☐  $O(\sqrt{n})$  where  $\sqrt{n}$  denotes the square root function.

### Question 5

1 / 1 pts

Which one is true about  $T(n) = 2 \cdot T(\lfloor n/2 \rfloor) + n$  ?

- ☐  $O(n \cdot \log n)$
- ☐  $\Omega(n \cdot \log n)$
- ☐  $\Theta(n \cdot \log n)$

Correct!

- ☒ All of the above.

### Question 6

1 / 1 pts

What is the solution of  $T(n) = 4 \cdot T(n/2) + n \cdot \sqrt{n}$  using the Master theorem?

- ☐  $\Theta(n \cdot \sqrt{n})$ , Case 3
- ☒  $\Theta(n^2)$ , Case 1
- ☐  $\Theta(n \cdot \log n)$ , Case 2
- ☐  $\Theta(n^2)$ , Case 3

Correct!

### Question 7

1 / 1 pts

What is the solution of  $T(n) = T(3n/4) + 1$  using the Master theorem?

- ☐  $\Theta(\log n)$ , Case 1
- ☐  $\Theta(n \cdot \log n)$ , Case 3
- ☐  $\Theta(n)$ , Case 1
- ☒  $\Theta(\log n)$ , Case 2

Correct!

### Question 8

1 / 1 pts

What is the solution of  $T(n) = 3 \cdot T(n/3) + n \cdot \log n$  using the Master theorem?

- ☐  $\Theta(n \cdot \log n)$ , Case 2
- ☐  $\Theta(n^2)$ , Case 1
- ☐  $\Theta(n \cdot \log n)$ , Case 3
- ☒ The Master theorem does not apply.

Correct!

Quiz Score: 8 out of 8