

### Practice with Recurrence Relations

Solve the following recurrence relations using the iteration technique:

1)  $T(n) = T(n - 1) + 2, \quad T(1) = 1$

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Don't forget to go through the more recurrence relation examples pdf file to see more examples.

Substituting Equations

2)  $T(n) = 2T(n/2) + n, \quad T(1) = 1$

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Substituting Equations

3)  $T(n) = 2T\left(\frac{n}{2}\right) + 1, T(1) = 1$

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Substituting Equations

$n \rightarrow n/2$

4)  $T(n) = T(n - 1) + n, T(1) = 1$

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Substituting Equations

$n \rightarrow n-1$

5.

Use the iteration technique to find a Big-Oh bound for the recurrence relation below.

Note you may find the following mathematical result helpful:  $2^{\log_3 n} = n^{\log_3 2}$  ,

$$\sum_{i=0}^{\infty} (2/3)^i = 3$$

$$T(n) = 2T(n/3) + cn$$