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Exercises

Solve the following recurrence relations. If necessary make up appropriate termination conditions.

1. $T(n) = 2\,T(n-1) + 5$
2. $T(n) = 3\,T(n-1)$
3. $T(n) = T\left(\frac{n}{2}\right) + c\,log\,n$
4. $T(n) = T\left(\frac{n}{2}\right) + c\,n^2$
5. $T(n) = 2\,T\left(\frac{n}{2}\right) + log\,n$
6. $T(n) = 8\,T\left(\frac{n}{2}\right) + n^2$
7. $T(n) = 2\,T\left(\frac{n}{2}\right) + n^3$
8. $T(n) = 2\,T\left(\frac{9n}{10}\right) + n$
9. $T(n) = 16\,T\left(\frac{n}{2}\right) + (n\,log\,n)^4$
10. $T(n) = 7\,T\left(\frac{n}{3}\right) + n$
11. $T(n) = 9\,T\left(\frac{n}{3}\right) + n^3\,log\,n$
12. $T(n) = 2\,T\left(\frac{n}{4}\right) + \sqrt{n}$
13. $T(n) = 3\,T\left(\frac{n}{2}\right) + n\,log\,n$
14. $T(n) = 5\,T\left(\frac{n}{5}\right) + \frac{n}{log\,n}$
15. $T(n) = 4\,T\left(\frac{n}{2}\right) + n^2\,\sqrt{n}$
16. $T(n) = 2\,T\left(\frac{n}{2}\right) + \frac{n}{log\,n}$
17. $T(n) = T(n-1) + \frac{1}{n}$
18. $T(n) = T(n-1) + log\,n$
19. $T(n) = T(n-2) + 2\,log\,n$
20. $T(n) = \sqrt{n}\,T(\sqrt{n}) + n$