

4-1 Recurrence examples

Give asymptotic upper and lower bounds for $T(n)$ in each of the following recurrences. Assume that $T(n)$ is constant for $n \leq 2$. Make your bounds as tight as possible, and justify your answers.

a. $T(n) = 2T(n/2) + n^3.$

b. $T(n) = T(9n/10) + n.$

c. $T(n) = 16T(n/4) + n^2.$

d. $T(n) = 7T(n/3) + n^2.$

e. $T(n) = 7T(n/2) + n^2.$

f. $T(n) = 2T(n/4) + \sqrt{n}.$

g. $T(n) = T(n-1) + n.$

h. $T(n) = T(\sqrt{n}) + 1.$