

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

Applying Master method:

case #1: $\Theta(n^2) / n^{\lg 7} = \Theta(n^{2-\lg 7}) = \Theta(n^{-0.8})$

$\therefore \underline{T(n) = \Theta(n^{\lg 7})}$ Ans

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

$\Rightarrow T(n) = n + T(n-1)$

$\Rightarrow T(n) = n + (n-1) + T(n-2)$

$\Rightarrow T(n) = n + (n-1) + (n-2) + \dots + T(1)$

$T(n) = \sum_{i=2}^n i + \Theta(1)$

$= \sum_{i=1}^n (i-1) + \Theta(1)$

$= \frac{n(n+1)}{2} - 1 + \Theta(1)$

$= \underline{\underline{\Theta(n^2)}}$

Ans