Master Theorem Practice

$T(n) = 3T(\frac{n}{9}) + \sqrt{n}$

$a = 3, b = 9, f(n) = n$ $n^{\log_b a} = n^{\log_9 3} = n^{\frac{1}{2}}$ Case: Case 2 Result: $\Theta(n^{\frac{1}{2}} \log n)$

$T(n) = 4T(\frac{n}{2}) + n^3$

$a = 4, b = 2, f(n) = n^3$ $n^{\log_b a} = n^{\log_2 4} = n^2$ Case: Case 3 Result: $\Theta(n^3)$

$5T(\frac{n}{4}) + n \log n$

$a = 5, b = 4, f(n) = n \log n$ $n^{\log_b a} = n^{\log_4 5}$ Case: Case 1 Result: $\Theta(n^{\log_4 5})$