

Solutions, Quiz Feb 6

Three Stooges Sort has recursion $T(n) = 3T(\frac{2}{3}n) + \text{constans}$. Thus, we need to compare the constant with $n^{\log_{3/2} 3}$. Notice that the exponent is at least 2 since $(\frac{3}{2})^2 = \frac{9}{4} = 2.25 < 3$.

Now, constans $\in O(n^{\log_{3/2} 3 - \epsilon})$ for $0 < \epsilon < 1$, since the exponent of n is then still at least 1. Thus, Case 1 of the master theorem applies and

$$T(n) = \Theta(n^{\log_{3/2} 3}).$$

The ϵ is important.