

3) (10 pts) ANL (Summations and Recurrence Relations)

Using the iteration technique, find a tight Big-Oh bound for the recurrence relation defined below:

$$T(n) = 3T\left(\frac{n}{2}\right) + n^2, \text{ for } n > 1$$
$$T(1) = 1$$

Hint: You may use the fact that $\sum_{i=0}^{\infty} \left(\frac{3}{4}\right)^i = 4$ and that $3^{\log_2 n} = n^{\log_2 3}$, and that $\log_2 3 < 2$.