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 $\sum_{i=0}^{\infty}(\frac{3}{4})^i = 4$ and that $3^{log_2 n} = n^{log_2 3}$, and that $log_2 3 < 2$.

Computer Science Foundation Exam

January 13, 2018

Section II B

ALGORITHMS AND ANALYSIS TOOLS

NO books, notes, or calculators may be used,
and you must work entirely on your own.

Name: _____

UCFID: _____

NID: _____

Question #	Max Pts	Category	Passing	Score
1	10	DSN	7	
2	5	ALG	3	
3	10	DSN	7	
TOTAL	25		17	

You must do all 3 problems in this section of the exam.

Problems will be graded based on the completeness of the solution steps and <u>not</u> graded based on the answer alone. Credit cannot be given unless all work is shown and is readable. Be complete, yet concise, and above all <u>be neat</u>.