**Quiz 1**

**Question 1 (2 points):** Show that 5n2 + 2n + 8 is O(n2)

**Question 2 (8 points):** Give an expression for the runtime T(n) if you can solve the following recurrences using **the Master theorem**. Otherwise, indicate that **the Master Theorem does not apply**.

T(n) = 5T(n/3) + n

T(n) = 5T(n/3) + log n

T(n) = 5T(n/3) + n2

T(n) = 6T(n/3) + n2 log n

T(n) = 5T(n/5) + n/2

T(n) = 27T(n/3) – n3 log n

T(n) = 26T(n/3) – n3 log n

T(n) = 8T(n/2) + n/ log n

**Question 3 (2 points):** Use the iteration method to solve the following recurrence.

**T(n) = 3T(n/3) + n**

**Question 4 (3 points):** Use the recursion-tree method to solve the following recurrence.

**T(n) = 3T(n/3) + n**