CSE 2321: Homework 8

Due Monday 10/14 at the start of class.

Submit solutions on separate paper, stapling together multiple pages.

1. (5 points) Find the running time for the program in (HW7(Q1)) assuming that the cost of the statement in line i is $c_i$ for $i=2, 3, 4, 5, 8$ (see HW7 Sols in the course website). Do a line-by-line analysis.

2. (5 points) Given the algorithm below, write the summations that represent the running time of the algorithm and solve it. Show all work. Do not do a line-by-line analysis.

```java
1 x = 0;
2 for i = n^2 to n^2 + 5 do
3 for j = 4 to n do
4 x = x + i - j; /* The cost of line 4 is c */
5 end
6 end
7 return x;
```

3. (5 points) Write summations to represent the running time of the following algorithm. Find the upper bound. Do not use series.

```java
1 x = 0;
2 for i = 1 to n do
3 for j = 1 to 3i^3 do
4 x = x + i - j;
5 end
6 end
7 return x;
```

4. (5 points) Find the running time of the algorithm represented by the following summation. Use bounding.

$$T(n) = \sum_{i=n}^{4n^3} \sum_{j=i}^{8n^3} c$$