Time and space complexity

Assignment Questions

PW SKILLS

Question 1. Analyze the time complexity of the following Java code and suggest a way to improve it:

```
int sum = 0;
for(int i = 1; i ⩽ n; i++) {
   for(int j = 1; j ⩽ i; j++) {
      sum++;
   }
}
```

Question 2: Find the value of T(2) for the recurrence relation T(n) = 3T(n-1) + 12n, given that T(0) = 5.

Question 3: Given a recurrence relation, solve it using a substitution method.
Relation : T(n) = T(n - 1) + c

Question 4: Given a recurrence relation:
T(n) = 16T(n/4) + n2logn
Find the time complexity of this relation using the master theorem.

Question 5: Solve the following recurrence relation using recursion tree method T(n) = 2T(n/2) + n

Question 6. T(n) = 2T(n/2) + K, Solve using Recurrence tree method.