

PSO 1

Problem 1. Give a big-O estimate for the number of operations (where an operation is an addition or a multiplication) used in this segment of an algorithm:

```
t ← 1;
for i = n to n2
  t ← t + 2it;
end
```

Problem 2. Suppose you have two different algorithms for solving a problem. To solve a problem of size n , the first algorithm uses exactly $n\sqrt{n}$ operations and the second algorithm uses exactly $n \log n$ operations. As n grows, which algorithm uses fewer operations? Plot the two functions.

Problem 3. Find all groups of functions in this list that are of the same order: $n^2 + \log n$, $2^n + 3^n$, $100n^3 + n^2$, $n^2 + 2^n$, $n^2 + n^3$, $3n^3 + 2^n$.

Task 1. Use any remaining time as office hours.

PSO 2

Task 1. As a review for the midterm, pick up 4-5 problems from the lecture slides, previous PSOs, and/or HWs and solve them.

Task 2. Use any remaining time as office hours.