

Oral Exam of Computational and Applied Math

1. Consider n scalars: $a(1), a(2), \dots, a(n)$. Our goal is to find the max partial sum, that is, find two indices p and q , where $p \leq q$, such that the partial sum, $a(p : q) = a(p) + a(p+1) + \dots + a(q)$, is maximized. Develop an algorithm that finds p , q , and $a(p : q)$ by accessing each $a(i)$ only once. For solution existence, assume that *not* all scalars are negative. Please provide a convincing oral proof to the correctness of your algorithm