

11. The number of operations executed by algorithms A and B is $40n^2$ and $2n^3$, respectively. Prove briefly that A is better than B, deciding the constant 'c' and n_0 , as defined for Big-O notation. [5 Marks]

for A: $C_1 = 40, n_0 = 1$

so ~~$f(n) \leq g(n)$~~ $g(n) = n^2$,

$f(n) = 40n^2 \in C_1 g(n)$ when $n \geq n_0$

A is $O(g(n))$ which is $O(n^2)$

for B: $C_2 = 2, n_0 = 1$

$g(n) = n^3$

$f(n) = 2n^3 \quad f(n) \leq C_2 g(n) \text{ when } n \geq n_0$

B is $O(g(n))$ which is $O(n^3)$

ment array X of integers. Algorithm C