

Question 8.

Algorithms Assignment 1

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1 Part 1

This can be disproved with a counter-example. If we take $f(n) = n$ and $g(n) = n^2$

Then the first condition is satisfied as $n < c \cdot n^2$ for all $n > 0$ and $c \geq 1$

However, the converse is not necessarily true, as n^2 grows faster than $c \cdot n$.

Hence, in this case, $g(n) \notin f(n)$

2 Part 2