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Problem 1.2

c. Is $f(n) + O(f(n)) = \theta(f(n))$ sometimes always or never true?

I believe that it is always true.

Two constants can be chosen such that both $f(n) + O(f(n)) = \Omega(f(n))$ and $f(n) + O(f(n)) = O(f(n))$ are true. When both of those are true θ is implied.