Exercise 1.

(a) Suppose that f is a multiplicative arithmetic function. Prove that $\mu f = \mu * f$ if and only if $f(n) = 2^{-\omega(n)}$ for all $n \in \mathbb{N}$.

(b) If you do not assume that f is multiplicative, what can you say about f if $\mu f = \mu * f$?