

Problem 3 (due Monday, March 17)

Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be an even continuous function such that $f(x+2)=f(x)$ for all x and f is increasing on $[0,1]$. Define a new function $g: \mathbb{R} \rightarrow \mathbb{R}$ by $g(x)=\int_0^2 f(t)f(t+x) \text{d}t$. Prove that $g(1)$ is the smallest value of g .

The problem was solved by Ashton Keith (Purdue University), Josiah Moltz, and Dr Mathew Wolak. For details see the following link [Solution](#).

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