Problem

Prove or disprove the following statement:

- For any bijection $f \colon \mathbb{Z} \to \mathbb{Z}$, there exists a bijection $g \colon \mathbb{Z} \to \mathbb{Z}$ and a positive integer c such that $|g(f(n)) - g(n)| \le c$ for all n.

(Math Problem of the Week, 8/4/96)
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