Senior February Monthly Problem Set

Due: 22 February 2018

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7. Call a function $f : \mathbb{N} \to \mathbb{N}$ *almost linear* if $f(m+n) - f(m) - f(n)$ only takes finitely many values as m and n vary through the natural numbers. Suppose that $f : \mathbb{N} \to \mathbb{N}$ and $g : \mathbb{N} \to \mathbb{N}$ are almost linear. Show that $f(g(n)) - g(f(n))$ only takes finitely many values as n varies through the natural numbers.

8.

Email submission guidelines

- Email your solutions to `samf.training.assignments@gmail.com`.
- Submit each question in a single separate PDF file (with multiple pages if necessary), with your name and the question number written on each page.
- If you take photographs of your work, use a document scanner such as CamScanner to convert to PDF.
- If you have multiple PDF files for a question, combine them using software such as PDFsam.