University of Colorado
Department of Mathematics
Problem of the Month
October 2014

Find all the real-valued functions $f(x)$, $g(x)$ and $h(x)$ defined for all the real numbers such that for any $x \neq y$

$$\frac{f(x) - g(y)}{x - y} = \frac{1}{2}\left(h(x) + h(y)\right)$$