Problem 1E. Determine all functions $f, g : \mathbb{R} \to \mathbb{R}$ satisfying

$$g(f(x+y)) = f(x) + (2x+y)g(y)$$

for all $x, y \in \mathbb{R}$.

Problem 2E. Determine all functions $f : \mathbb{R} \to \mathbb{R}$ satisfying

$$f(f(x)f(y)) + f(x+y) = f(xy)$$

for all $x, y \in \mathbb{R}$.

Problem 3E. Determine all functions $f : \mathbb{R} \to \mathbb{R}$ satisfying

$$f(xf(x) + f(y)) = y + f(x)^2$$

for all $x, y \in \mathbb{R}$.

Problem 4E. Determine all functions $f : \mathbb{R} \to \mathbb{R}$ satisfying

$$f([x]y) = f(x)[f(y)]$$

for all $x, y \in \mathbb{R}$.

Problem 5E. Determine all functions $f : \mathbb{R} \to \mathbb{R}$ satisfying

$$f(x - f(y)) = f(f(y)) + xf(y) + f(x) - 1$$

for all $x, y \in \mathbb{R}$.

Problem 6E. Determine all functions $f : \mathbb{R} \to \mathbb{R}$ satisfying

$$f(f(x) + y) = f(f(x) - y) + 4f(x)y$$

for all $x, y \in \mathbb{R}$.

Problem 7E. Determine all functions $f : \mathbb{R} \to \mathbb{R}$ satisfying

$$f(x + f(x+y)) + f(xy) = x + f(x+y) + yf(x)$$

for all $x, y \in \mathbb{R}$.