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A functional equation is an equation in terms of independent variables, and also unknown functions that are to be solved for; the derivatives of the unknown functions are usually not involved in the equation. Many properties of functions can be determined by studying the types of functional equations they satisfy, and functional equations play an important role in many areas of mathematics, from undergraduate algebra and trigonometry ($f(xy) = f(x) + f(y)$, $f(x + y) = f(x)g(y) + g(x)f(y)$) to Number Theory (functional equation satisfied by the Riemann zeta function) and Complex Analysis (Schroeder's and Abel's equations).

Although finding all the solutions of a general functional equation can be quite challenging, some common solution techniques are known. For example, students in an undergraduate Real Analysis class can be asked to find the continuous solutions of Cauchy's equation, $f(x + y) = f(x) + f(y)$. We consider Schroeder's functional equation, $f \circ g = af$, where g is a given function and a is a constant. We discuss solutions f of this equation that map the unit disk into the complex plane and explain how to find solutions of the equation for some functions g . (Received September 22, 2010)