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Mark W. Coffey* (mcoffey@mines.edu), 16th and Illinois Streets, Department of Physics, Colorado School of Mines, Golden, CO 80401. *Special functions, mathematical physics, and number theory.*

Special functions and numbers occur in many areas of mathematical physics, including random matrix theory, calculations of quantum field theory and quantum mechanics, and diverse areas of classical theoretical physics. Often the special functions have exact known values in terms of important special numbers. For instance, the Riemann zeta function at even integers evaluates in terms of Bernoulli numbers, and the digamma function at the integers gives the Euler constant and harmonic numbers. We will illustrate the use of special function theory in a context of theoretical high energy physics that leads to connections with number theory. (Received September 21, 2010)