1035-11-905 **Abdul Hassen*** (hassen@rowan.edu), 201 Mullica Hill Rd, Mathematics Department, Rowan University, Glassboro, NJ 08028, and **Hieu D Nguyen** (nguyen@rowan.edu), 201 Mulica Hill Rd, Mathematics Department, Rowan University, Glassboro, NJ 08028. *Error Zeta Function.*

This paper investigates a new special function referred to as the error zeta function. Derived as a fractional generalization of hypergeometric zeta function: $\zeta_N(s) = \frac{1}{\Gamma(s+N-1)} \int_0^\infty \frac{x^{s+N-2}}{e^x - T_{N-1}(x)}\, dx \qquad (N \geq 1)$, where $T_N(x)$ is the Taylor polynomial of e^x at the origin having degree N, the error zeta function given by $\zeta_{1/2}(s) = \frac{1}{\Gamma(s-1/2)} \int_0^\infty \frac{x^{s-3/2} e^{-x}}{\mathrm{erf}(\sqrt{x})} dx = \frac{2}{\Gamma(s-1/2)} \int_0^\infty \frac{x^{2(s-1)} e^{-x^2}}{\mathrm{erf}(x)} dx$, is shown to exhibit many properties analogous to their hypergeometric counterpart, including the intimate connection to Bernoulli numbers. These new properties are treated in detail and are used to demonstrate a functional inequality satisfied by error zeta functions. (Received September 17, 2007)