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**Rafael Ceja Ayala\*** (rceja127@gmail.com), 7960 La Rivera Dr apt 138, Sacramento, CA 95826, and **Jason Turner, Erik Knutsen** and **Alejandra Alvarado**. *The Binary and Ternary Interpretation of the Collatz Conjecture.*

Consider the function  $C(x) : \mathbb{Z}^+ \rightarrow \mathbb{Z}^+$ , where  $C(x) = 3x + 1$  if  $x$  is odd and  $C(x) = \frac{x}{2}$  if  $x$  is even. The Collatz conjecture states that regardless of the initial value of  $x$ ,  $C^k(x) = 1$  for some finite  $k \in \mathbb{N}$ . We study the behavior of analogous functions over  $\mathbb{Z}[i]$  and  $\mathbb{Z}[\omega]$ . In particular, we show that the binary interpretation of  $C(x)$  extends to a binary interpretation of our Gaussian Collatz function and a ternary interpretation of our Eisenstein Collatz function. (Received September 26, 2017)