

1135-11-711

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08544-1000. *Iterates of Schemmel Totient Functions.*

For each nonnegative integer r , the r^{th} Schemmel totient function is the multiplicative arithmetic function satisfying

$$S_r(p^\alpha) = \begin{cases} p^{\alpha-1}(p-r), & \text{if } p \geq r; \\ 0, & \text{if } p < r \end{cases}$$

for all primes p and positive integers α . In particular, $S_1 = \varphi$ is Euler's totient function. We make the additional convention $S_r(0) = 0$. After discussing results of Pillai, Shapiro, and Erdős–Granville–Pomerance–Spiro concerning iterates of Euler's totient function, we consider analogous results for the Schemmel totient functions. For example, it turns out that the function $H_r: \mathbb{N} \rightarrow \{0, 1\}$ given by $H_r(n) = \lim_{k \rightarrow \infty} S_r^k(n)$ is completely additive. We will discuss a conjecture due to Harrington and Jones and pose some additional open problems and conjectures. (Received September 13, 2017)