

Lawrence Somer and Michal Křížek  
*Prime Lehmer and Lucas Numbers With Composite Indices*,  
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**Abstract**

Let  $R(L, M)$  and  $U(P, Q)$  denote the Lehmer and Lucas sequences, respectively. It is shown that if  $R(L, M)$  and  $U(P, Q)$  are nondegenerate, then  $R_n(L, M)$  and  $U_n(P, Q)$  can be prime for composite  $n$  only if  $n \in \{4, 6, 8, 9, 10, 14, 15, 21, 25, 26, 49, 65\}$ . Moreover, all instances in which  $R_n(L, M)$  or  $U_m(P, Q)$  are prime are explicitly given when  $n \in \{14, 15, 21, 26, 49, 65\}$  and  $m \in \{6, 8, 10, 15, 25, 26, 65\}$ .