PROBLEM OF THE MONTH, SEPTEMBER 2019

After a one semester hiatus, the *Problem of the Month* column is back! Here is the challenge for September 2019.

Consider the integer sequence $fx_n g_{n\ 0}$ given by $x_0 = 0; x_1 = 1$ and

$$x_n = 4x_{n\ 1} \quad x_{n\ 2}; \quad \text{for all } n \quad 2:$$

The rst few terms of this sequence are

$$0; 1; 4; 15; 56; 209; 780; 2911; 10864; 40545; 151316; 564719; 2107560; 7865521; 29354524; : : :$$

Find the smallest n 2 such that x_n is a prime number, or prove that such an n does not exist.

Submit your solutions to professor Dan Ismailescu, Mathematics Department via email at dan.p.ismailescu@hofstra.edu, or bring it in person at 103A Roosevelt Hall.