Bilkent University
Department of Mathematics

PROBLEM OF THE MONTH

Term: February 2021

Let $(a_n)_{n=1}^{\infty}$ be a sequence of integers with $a_1 = 1, a_2 = 2$ and

$$a_{n+2} = a_{n+1}^2 + (n+2)a_{n+1} - a_n^2 - na_n$$

for all $n \geq 1$. We say that a prime number is *good* if it divides at least one term of this sequence.

a) Show that there exist infinitely many good prime numbers.

b) Find three not good prime numbers.