



Bilkent University  
Department of Mathematics

## PROBLEM OF THE MONTH

**Term:** September 2019

Let  $p > 2$  be a prime number,  $m > 1$  and  $n$  be positive integers such that

$$\frac{m^{pn} - 1}{m^n - 1}$$

is a prime number. Show that

$$pn \mid (p-1)^n + 1.$$