



Bilkent University  
Department of Mathematics

## PROBLEM OF THE MONTH

**Term:** September 2017

Let  $n$  be a positive integer and  $\phi(n)$  be the number of positive integers less than  $n$  that are relatively prime to  $n$ . Find all pairs of positive integers  $(m, n)$  satisfying

$$2^n + (n - \phi(n) - 1)! = n^m + 1.$$