University of Colorado

Department of Mathematics

Problem of the Month

February 2020

Suppose that a finite group G has the property that there exists a positive integer n such that for any two elements $x, y \in G$ the following three equations hold:

$$(xy)^n = x^n y^n, \quad (xy)^{n+1} = x^{n+1} y^{n+1}, \quad \text{and} \quad (xy)^{n+2} = x^{n+2} y^{n+2}.$$

Show that G must be commutative.