

Problem of the Week

Proposed by Bernardo Ábrego and Silvia Fernández

October 6-13

Real numbers a , b , and c satisfy that

$$\frac{1}{a} + \frac{1}{b} + \frac{1}{c} = \frac{1}{a + b + c}.$$

Prove that, for every odd integer n , the following identity holds:

$$\left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c} \right)^n = \frac{1}{a^n} + \frac{1}{b^n} + \frac{1}{c^n} = \frac{1}{a^n + b^n + c^n}.$$

This contest is sponsored by the Mathematics Department. Open to all CSUN students. Winner gets \$10 or an equivalent prize. All complete and correct solutions get a certificate. Type and send your solution before October 13th, 9:00PM to silvia.fernandez@csun.edu. All steps of the solution must be clearly justified. For rules, winners, solutions, and more information visit: www.csun.edu/math/probweek