Bilkent University
Department of Mathematics

Problem Of The Month

Term: July-August 2018

Let x, y, z be positive real numbers such that

$$\sqrt{x}, \sqrt{y}, \sqrt{z} \text{ are sides of a triangle and } \frac{x}{y} + \frac{y}{z} + \frac{z}{x} = 5.$$

Prove that

$$\frac{x(y^2 - 2z^2)}{z} + \frac{y(z^2 - 2x^2)}{x} + \frac{z(x^2 - 2y^2)}{y} \geq 0.$$