Bilkent University
Department of Mathematics

PROBLEM OF THE MONTH

Term: October 2019

Let x, y, z be real numbers satisfying $y > 2z > 4x$ and

$$2(x^3 + y^3 + z^3) + 15(xy^2 + yz^2 + zx^2) > 16(x^2y + y^2z + z^2x) + 2xyz.$$

Show that $4x + y > 4z$.