Bilkent University
Department of Mathematics

Problem Of The Month

Term: October 2006

Let x_1, x_2, x_3 and x_4 be real numbers satisfying the following equations:

$x_1 + x_2 + x_3 + x_4 = 0$

and

$x_1^2 + x_2^2 + x_3^2 + x_4^2 = 1.$

Find the maximal possible value of the expression $x_1^3 + x_2^3 + x_3^3 + x_4^3$.