University of Colorado
Department of Mathematics
Problem of the Month
October 2012

Show that for every positive integer n there exists a constant $c_n > 0$ with the following property:

For every polynomial $P(x) = x^n + a_1 x^{n-1} + \cdots + a_{n-1}x + a_n$ of degree n with leading coefficient 1 and for every b and $u > 0$

$$\int_b^{b+u} |P(x)|dx \geq c_n u^{n+1}.$$