University of Colorado
Department of Mathematics
Problem of the Month
September 2008

Construct for $n \geq 3$ a polynomial of degree n with n distinct real roots, denoted by $a_1 < a_2 < \cdots < a_n$, such that

$$\int_{a_1}^{a_2} |f(x)|dx = \int_{a_2}^{a_3} |f(x)|dx = \cdots = \int_{a_{n-1}}^{a_n} |f(x)|dx.$$