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Problem Section

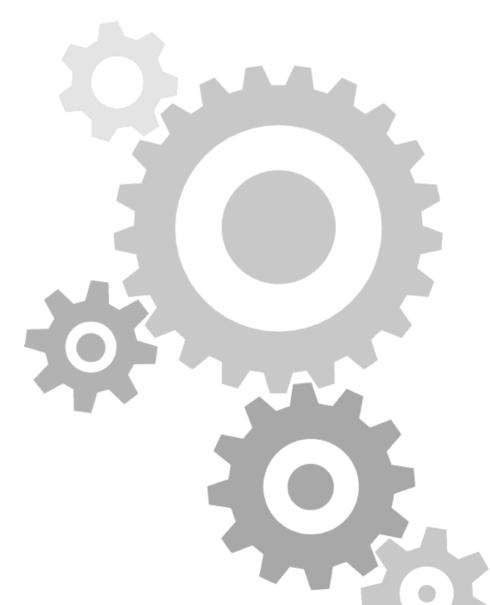
Problem A (proposed by Hendrik Lenstra) Let $a, b \in \mathbb{C}$. Show that if there exists an irreducible polynomial $f \in \mathbb{Q}[X]$ such that f(a) = f(a+b) = f(a+2b) = 0, then b = 0.

Problem B (The attribution will appear in the March issue of 2014)

Let *n* be a positive integer, and let e_{ij} be an integer for all $1 \le j \le i \le n$. Show that there exists an $n \times n$ -matrix with integer entries such that the eigenvalues of the top left $i \times i$ -minor are e_{i1}, \ldots, e_{ii} (with multiplicity).

Problem C (proposed by Bart de Smit and Hendrik Lenstra)

Let *A* be a finite commutative unital ring. Does there exist a pair (B, f) with *B* a finite commutative unital ring in which every ideal is principal, and *f* an injective ring homomorphism $A \rightarrow B$?



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