The deadline for solutions to the problems in this edition is March 1, 2010.

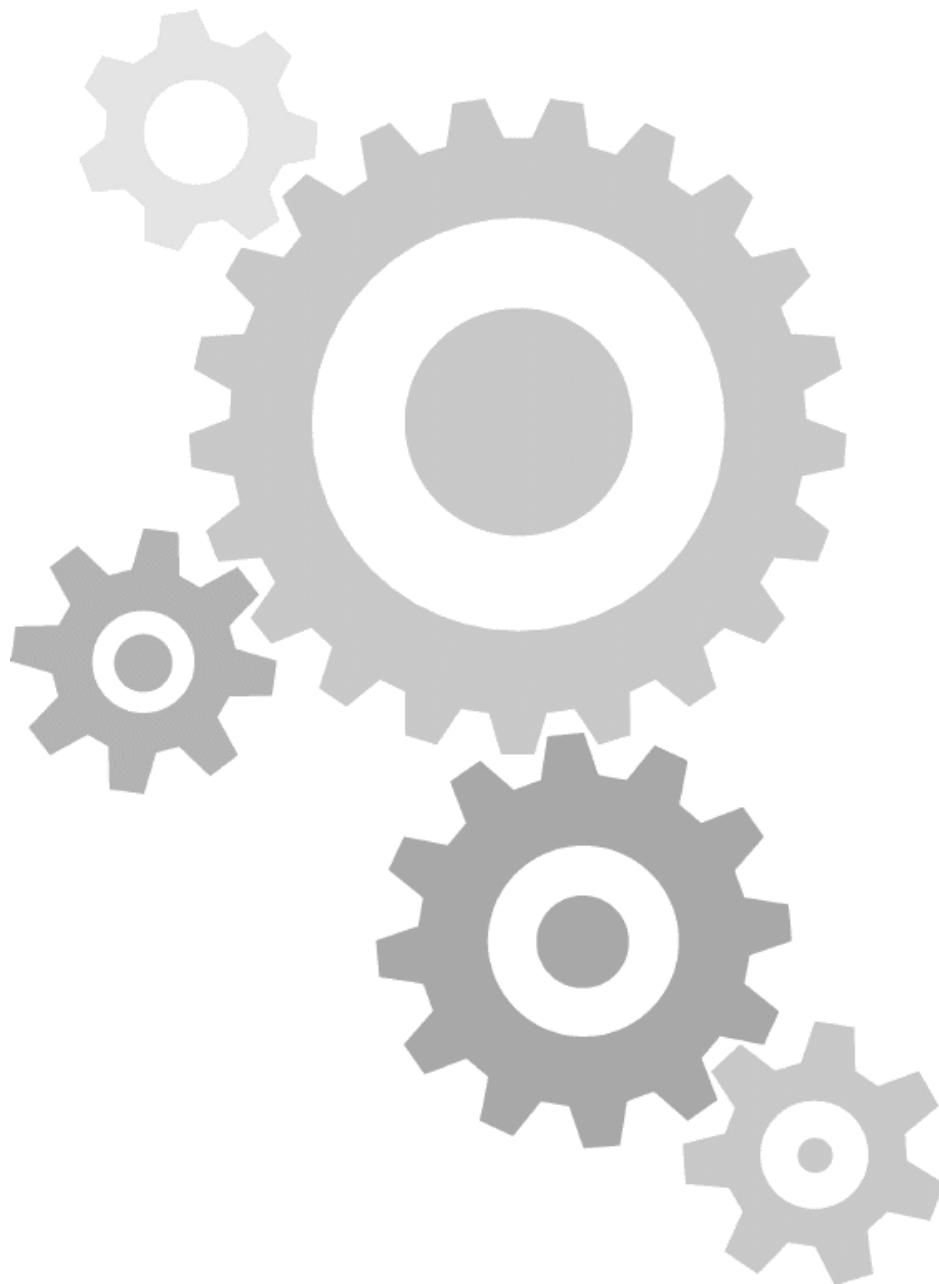**Problem A** (proposed by Alexey Kanel)

Is there a polynomial with rational coefficients whose minimum on the real line is $\sqrt{2}$?

Problem B (proposed by Frans Oort)

Are there infinitely many positive integers whose positive divisors sum to a square?

Problem C (proposed by Gabriele Dalla Torre)

For which odd positive integers n do there exist an odd integer $k > n$ and a subset $S \subset \mathbf{Z}/k\mathbf{Z}$ of size n such that for every non-zero element $r \in \mathbf{Z}/k\mathbf{Z}$ the cardinality of the intersection $S \cap (S + r)$ is even? What about even n?