

Problemen

| Problem Section

Problem A (Ilya Bogdanov)

Fix a point P in the interior of a face of a regular tetrahedron Δ . Show that Δ can be partitioned in four congruent convex polyhedra such that P is a vertex of one of them.

Problem B (based on a proposal of Benne de Weger)

Let n be a positive integer. Show that 3^n divides the numerator of

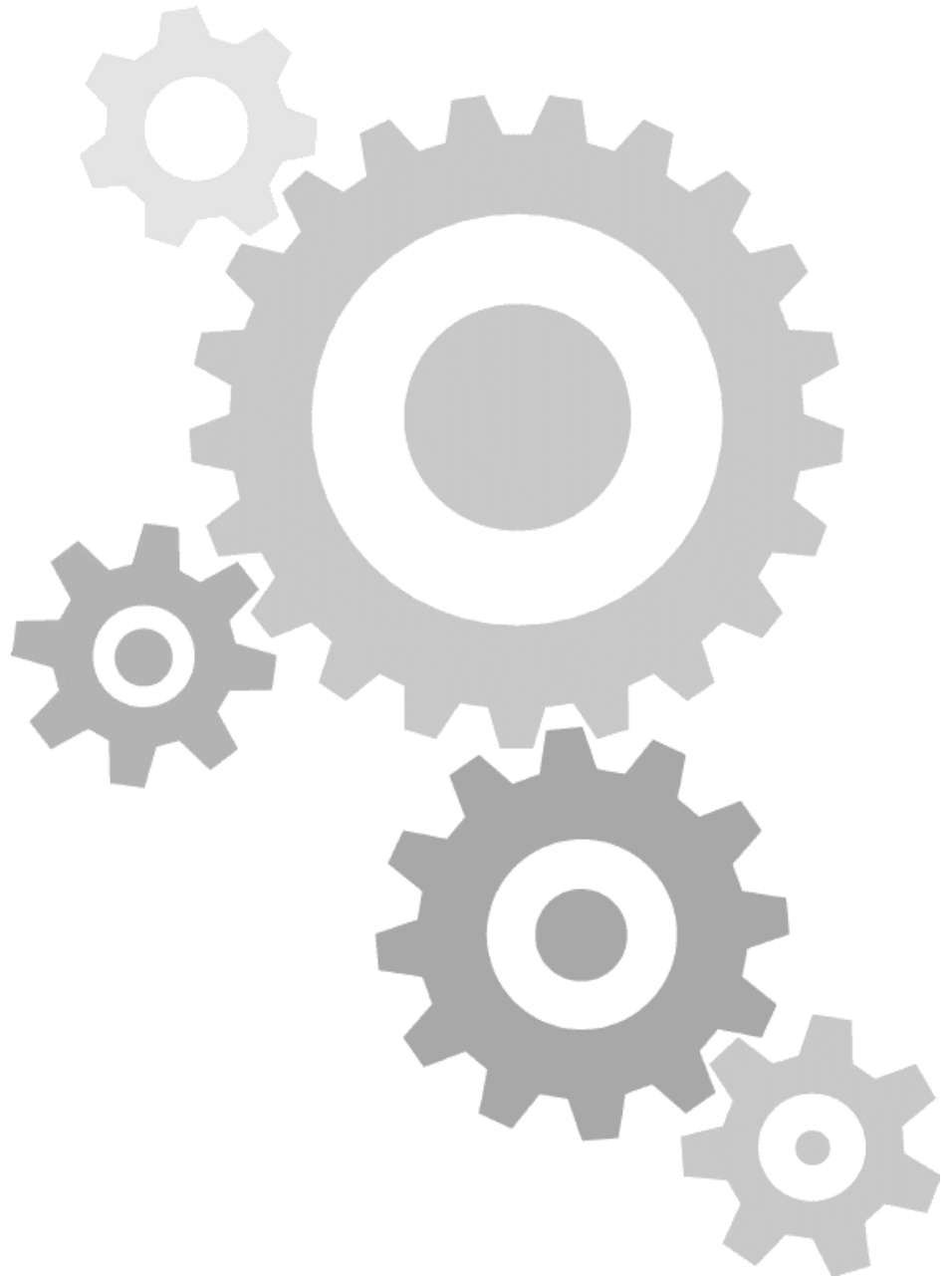
$$\sum_{k=1}^n \frac{4k-1}{2k(2k-1)} 9^k.$$

Problem C (Marco Golla and Marco Golla)

Let $n > 1$ be an integer. Show that there are no non-linear complex polynomials $f(X)$ such that

$$f^n(X) - X = (f \circ f \circ \dots \circ f)(X) - X$$

is divisible by $(f(X) - X)^2$.


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