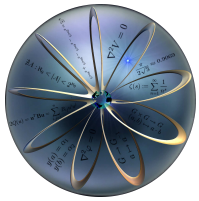

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rational root theorem

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Consider the polynomial

$$p(x) \;=\; a_n x^n + a_{n-1} x^{n-1} + \cdots + a_1 x + a_0$$

where all the coefficients a_i are integers.

If $p(x)$ has a rational zero u/v where $\gcd(u, v) = 1$, then $u \mid a_0$ and $v \mid a_n$. Thus, for finding all rational zeros of $p(x)$, it suffices to perform a finite number of tests.

The theorem is related to the result about monic polynomials whose coefficients belong to a unique factorization domain. Such theorem then states that any root in the fraction field is also in the base domain.