

An irreducibility criterion for the sum of two relatively prime polynomials

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Abstract. We partly extend a result of Cavachi and Bonciocat on the sum of two relatively prime polynomials and prove that a polynomial of the form $f(X) + Ng(X)$, where $f(X), g(X) \in \mathbb{Z}[X]$ are two non-zero relatively prime polynomials with $\deg f < \frac{1}{2} \deg g$, is irreducible over \mathbb{Q} for all but finitely many square-free positive integers N . In addition, we derive a necessary and sufficient condition for a polynomial $r + p^2g(X) \in \mathbb{Z}[X]$ to be reducible over \mathbb{Q} for a sufficiently large prime number p .

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