

Let $\mathbb{Z}[x]$ be the ring of polynomials with integer coefficients, and let $f(x), g(x) \in \mathbb{Z}[x]$ be nonconstant polynomials such that $g(x)$ divides $f(x)$ in $\mathbb{Z}[x]$. Prove that if the polynomial $f(x) - 2008$ has at least 81 distinct integer roots, then the degree of $g(x)$ is greater than 5.