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Jeff Mermin. *Generalized Green's Theorem.*

Green proved Green's Theorem on how the Hilbert function changes after taking a quotient by a generic linear form. He used this result to provide a new and simple proof of Macaulay's Theorem, which characterizes the Hilbert functions of graded ideals in a polynomial ring. Herzog and Popescu extended Green's result to generic forms of any degree, but under the assumption that the ground field has characteristic zero. Later, Gasharov found a new proof that works in all characteristics. We provide a different proof, which works in all characteristics and which works not only over polynomial rings but also yields the new result that the theorem holds over Clements-Lindstrom quotient rings. (Received September 04, 2006)