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Krishnaswami Alladi* (alladik@ufl.edu), Department of Mathematics, University of Florida, Gainesville, FL 32611. *A multi-dimensional extension of Sylvester's identity.*

In 1882 Sylvester obtained a significant refinement of Euler's celebrated pentagonal numbers theorem by combinatorial means. Subsequently Cayley produced a q-hypergeometric proof. We now obtain a multi-dimensional extension of Sylvester's identity by extending his combinatorial method. We then provide a q-hypergeometric proof by extending Cayley's method. (Received August 26, 2014)