1052-11-99   **Krishnaswami Alladi*** (`alladik@ufl.edu`), Department of Mathematics, University of Florida, 358 Little Hall, Gainesville, FL 32606. *COMBINATORIAL STUDY AND COMPARISON OF PARTIAL THETA IDENTITIES OF ANDREWS AND RAMANUJAN.*

We study a partial theta function identity of Andrews combinatorially and show that it has a partition interpretation like Euler's pentagonal numbers theorem but involving partitions into distinct parts with smallest part odd. Andrews' identity has the advantage that it has a free parameter which can keep track of the number of odd parts in the partition. Recently, I obtained a similar partition interpretation for a partial theta function identity of Ramanujan, also with a free parameter. The amazing thing is that even though the weights in the free parameter in the identities of Andrews and Ramanujan are different, the sums of these weights over the same set of partitions are identical and are non-vanishing only at the perfect squares. Our proof and analysis of Andrews' partial theta identity lends fresh light on certain classical q-series identities and yields some new weighted partition theorems as well. (Received August 23, 2009)