A general relation between sums of cubes and triangular pyramidal numbers

ABSTRACT

Let ck(m) denote the number of representations of integer m as a sum of k cubes and pk(m) denote the number of representations of integer m as a sum of k triangular pyramidal numbers. We give a relation pk(m) = coddk (з) where з = 48m ï 24n+2ñ+k and coddk (з) denotes the number of representations of integer з as a sum of k odd cubes, for a single value of m. A general relation between number of representations between Ɛki=1 xsi and its associated polytopic numbers for any orders of s, is also given.

Keyword: Number of representations; Sum of cubes; Sum of triangular pyramidal numbers