For example, consider the second \((m = 2)\) row, that is set of coefficients \(\{30, 0, 1\}\), then

\[
\sum_{k=0}^{n-1} \sum_{j=0}^{m} A_{j,m}(n-k)^j k^j = n^{2m+1}, \quad m = 0,1,2, \ldots
\]

Note that blue-marked cells are items of OEIS sequence \textbf{A002457} and \(A_{j,m}; \ j = 0, \ldots, m; \ m = 1, 2, 3\) are items of in definitions of sequences \textbf{A287326}, \textbf{A300656}, \textbf{A300785}. Present in Table 1 coefficients \(A_{j,m}; \ j = 0, \ldots, m; \ m = 1, \ldots, 12\) are reached as solution of system of equations, to verify it refer to Mathematica code \textbf{here}. Also, the items of Table 1 are close related to coefficients \(\beta_{mn}\) (see C. Jordan, \textit{Calculus of Finite Differences}, pp. 448-450). Note that sum of \(m\)-th row of Table 1 equals to \(2^{(2m+1)} - 1\). Excel version of Table 1 available at \textbf{this link}.

**Question 1:**

- Is it exist any generating formula \(F(j, m) = A_{j,m}, \ m = 0,1,2, \ldots \) ? – Yes, the sequences \textbf{A302971} and \textbf{A304042} are nominators and denominators of \(A_{j,m}, \ m = 0,1,2, \ldots , 0 \leq j \leq m\). Results concerning \(F(j, m)\) could be verified via Mathematica code.