$$[A\ I] = \left[\begin{array}{ccccc|ccccc} 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 1 & 2 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 1 & 3 & 3 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 1 & 4 & 6 & 4 & 1 & 0 & 0 & 0 & 0 & 1 \end{array}\right] \xrightarrow[2 \le i \le 5]{r_i \leftarrow r_i - r_1} \left[\begin{array}{ccccc|ccccc} 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 \\ 0 & 2 & 1 & 0 & 0 & -1 & 0 & 1 & 0 & 0 \\ 0 & 3 & 3 & 0 & 0 & -1 & 0 & 0 & 1 & 0 \\ 0 & 4 & 6 & 4 & 1 & -1 & 0 & 0 & 0 & 1 \end{array}\right]$$

$$\xrightarrow[3 \le i \le 5]{r_i \leftarrow r_i - \binom{i}{1} r_2} \left[\begin{array}{ccccc|ccccc} 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 1 & -2 & 1 & 0 & 0 \\ 0 & 0 & 3 & 1 & 0 & 2 & -3 & 0 & 1 & 0 \\ 0 & 0 & 6 & 4 & 1 & 3 & -4 & 0 & 0 & 1 \end{array}\right] \xrightarrow[4 \le i \le 5]{r_i \leftarrow r_i - \binom{i-1}{2} r_3} \left[\begin{array}{ccccc|ccccc} 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 1 & -2 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & -1 & 3 & -3 & 1 & 0 \\ 0 & 0 & 0 & 4 & 1 & -3 & 8 & -6 & 0 & 1 \end{array}\right]$$

$$\xrightarrow[5 \le i \le 5]{r_i \leftarrow r_i - \binom{i-1}{3} r_4} \left[\begin{array}{ccccc|ccccc} 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & -1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 1 & -2 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & -1 & 3 & -3 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 & 1 & -4 & 6 & -4 & 1 \end{array}\right] \longrightarrow A^{-1} = \left[\begin{array}{ccccc} 1 & 0 & 0 & 0 & 0 \\ -1 & 1 & 0 & 0 & 0 \\ 1 & -2 & 1 & 0 & 0 \\ -1 & 3 & -3 & 1 & 0 \\ 1 & -4 & 6 & -4 & 1 \end{array}\right]$$