

$$a_1 = 1, a_{n+1} = 2a_n + n^2$$

$$\text{設 } (a_n + tn^2 + sn + r) = 2[a_{n-1} + t(n-1)^2 + s(n-1) + r]$$

展開比較係數可得 $t = 1, s = 2, r = 3$

$$\begin{aligned}(a_n + n^2 + 2n + 3) &= 2[a_{n-1} + (n-1)^2 + 2(n-1) + 3] \\ &= 2^2[a_{n-2} + (n-2)^2 + 2(n-2) + 3] \\ &= 2^3[a_{n-3} + (n-3)^2 + 2(n-3) + 3] \\ &= \dots\dots\dots \\ &= 2^{n-1}(a_1 + 1^2 + 2 \times 1 + 3) = 2^{n-1} \times 7\end{aligned}$$

一般式為 $a_n = -n^2 - 2n - 3 + 7 \times 2^{n-1}$