4. $a_{n+2} = a_{n+1} - a_n$

特徵方程式：$X^2 - X + 1 = 0$

$X = \frac{1+\sqrt{3}\,i}{2} = \omega$ or $X = \frac{1-\sqrt{3}\,i}{2} = \frac{1}{\omega}$，$\omega + \frac{1}{\omega} = 1$，$\omega^2 = \omega - 1$，$\omega^3 = -1$

令$a_n = C_1\omega^n + C_2\left(\frac{1}{\omega}\right)^n$

$$\begin{cases} C_1\omega + C_2\frac{1}{\omega} = 1 \\ C_1\omega^2 + C_2\left(\frac{1}{\omega}\right)^2 = 1 \end{cases}$$

解得 $C_1 = \frac{\omega^2+1}{\omega^2-1}$，$C_2 = \frac{\omega-1}{\omega+1}$

$a_n = \frac{\omega^2+1}{\omega^2-1}\omega^n + \frac{\omega-1}{\omega+1}\left(\frac{1}{\omega}\right)^n$