

Solution (#955)

$$\begin{pmatrix} x_n \\ y_n \end{pmatrix} = \frac{1}{(\alpha - \beta)} \begin{pmatrix} 5(\alpha^n - \beta^n) + 7(\alpha^{n-1} - \beta^{n-1}) \\ 4(\alpha^n - \beta^n) + 7(\alpha^{n-1} - \beta^{n-1}) \end{pmatrix},$$

where

$$\alpha = \frac{3 + \sqrt{37}}{2}, \quad \beta = \frac{3 - \sqrt{37}}{2}.$$