$$F_n = \frac{\varphi^n - \psi^n}{\sqrt{5}}, \quad \varphi = \frac{1+\sqrt{5}}{2}, \quad \psi = \frac{1-\sqrt{5}}{2}, \quad \psi = -\frac{1}{\varphi}$$

Выразить φ^n через F_n

$$\sqrt{5}F_n = \varphi^n - \psi^n$$

$$\sqrt{5}F_n = \varphi^n - \left(-\frac{1}{\phi}\right)^n$$

$$\varphi^{2n} - \sqrt{5}F_n\varphi^n - (-1)^n = 0$$