Z 2

$a_0 = 0,\ a_1 = 1,\ a_n = \frac{1}{2}(a_{n-1} + a_{n-2})$

$x^2 = \frac{1}{2}x + \frac{1}{2}$ $\qquad a_2 = \frac{1}{2}$

$x^2 - \frac{1}{2}x - \frac{1}{2} = 0$ $\qquad (x-1)(x+\frac{1}{2}) = 0$

czyli $a_n = -\frac{1}{2}A + 1 \cdot B$

$=3A+4$

$=-\frac{2}{3}$

z a_0 i a_1 $\qquad 0 = -\frac{1}{2} \cdot 0 + 1 \cdot 0$

$1 = -\frac{1}{2}A + 1B$

$\frac{1}{2} = \left(-\frac{1}{2}\right)^2 A + 1B$

$$\begin{cases} B = 1 + \frac{1}{2}A \\ \frac{1}{2} = \frac{1}{4}A + 1 + \frac{1}{2}A \end{cases} \Rightarrow \begin{cases} B = 1 + \left(-\frac{1}{3}\right) = \frac{2}{3} \\ A = -\frac{2}{3} \end{cases}$$

$$a_n = \left(-\frac{1}{2}\right)^n \cdot \left(-\frac{3}{3}\right) + \left(\frac{2}{3}\right)$$

$$\lim_{n\to\infty} a_n = \lim_{n\to\infty} \left(-\frac{1}{2}\right)^n \left(-\frac{3}{3}\right) + \frac{2}{3} = \frac{2}{3}$$