6.5. $a_{n+2} = \frac{3}{2} a_{n+1} - \frac{1}{2} a_n + \frac{n}{2^n}$ $\qquad a_0 = a_1 = 0$

$$a_{n+2} - \frac{3}{2} a_{n+1} - \frac{1}{2} a_n + \frac{n}{2^n} = 0$$

$$a_{n+2} - \frac{3}{2} a_{n+1} + \frac{1}{2} a_n + \left(\frac{1}{2}\right)^n n = 0$$

$$\langle a_n \rangle \left(E^2 - \frac{3}{2}E + \frac{1}{2}\right)\left(E - \frac{1}{2}\right)^2 = 0$$

$\Delta = \frac{9}{4} - 2 = \frac{1}{4}$

$\sqrt{\Delta} = \frac{1}{2}$

$E_1 = \frac{3-1}{4} = \frac{1}{2}$

$E_2 = \frac{3+1}{4} = 1$

anihilator: $\cancel{\left(E - \frac{3+\sqrt{17}}{4}\right)\left(E - \frac{3-\sqrt{17}}{4}\right)\left(E - \frac{1}{2}\right)^2}$

$$\left(E - \frac{1}{2}\right)(E - 1)\left(E - \frac{1}{2}\right)^2$$

$$\left(E - \frac{1}{2}\right)^3 (E - 1)$$

p. ogólne: $\left(\frac{1}{2}\right)^n (\alpha n^2 + \beta n + \gamma) + \delta$