$$r_{n+1} = 2r_n + (-)\, r_{n-1} + h^2 a_n$$

$$hV_n = (r_{n+1} - r_{n-1})/2$$

$$-2hV_n + r_{n+1} = r_{n-1}$$

$$r_{n+1} = 2r_n + r2hV_n - r_{n+1} + h^2 a_n$$

$$2\, r_{n+1} = 2r_n + 2hV_n + h^2 a_n$$

$$r_{n+1} = r_n + hV_n + \frac{h^2}{2} a_n$$

Error

$$h\, v_{n+1} = r_{n+1} - r_n + \frac{h^2}{2} \sum d_p a_{n-q+2}$$

Expresando en serie:

$$r_{n+1} = r_n + hV_n + \frac{h^2}{2}\frac{q}{3} a_n - \frac{h^2}{2} \frac{a_{n-1}}{3}.$$

$$a_n = 3(r_{n+1} - r_n - hV_n + \frac{h^2}{2} \frac{a_{n-1}}{3})\, 6$$

$$4h^2$$

$$r_{n+1} = r_n + hV_n + \frac{h^2}{4.2h^2} 6 \left( a_{n+1} + 3(r_{n+1} - r_n - hV_n + \frac{h^2}{2} \frac{a_{n-1}}{3} \right.$$

$$hV_{n+1} = \cancel{r_n} + hV_n + \frac{h2}{6}(a_{n+1} + 2a_n) - \cancel{r_n} + \frac{h^2}{6}(2a_{n+1} + a_n)$$

$$hV_{n+1} = hV_n + \frac{h^2}{6}(3a_{n+1} + 3a_n) = hV_n + \frac{h^2}{2}(a_{n+1} + a_n)$$