

$$i=1 \quad \begin{matrix} b_1 \\ \text{"} \\ b_0 \end{matrix} \quad \begin{matrix} b_{-1} \\ \text{"} \\ 0 \end{matrix}$$

$$a_1 = [b_{1-0} \cdot d_0 + b_{1-1} \cdot d_1 + b_{1-2} \cdot d_2] + r_1$$

$$\text{or } r_1 = a_1 - b_1 \cdot d_0 - b_0 \cdot d_1$$

for $i \geq 2$

$$a_i = b_i d_0 + b_{i-1} d_1 + b_{i-2} d_2$$

can get the b_i through by long division $\& r_1 \& r_0$ if we choose a $d(x) = x^2 + d_1 x + d_0$

$$\begin{bmatrix} r_0 \\ r_1 \end{bmatrix} = \begin{bmatrix} -b_1 & 0 \\ -b_0 & -b_1 \end{bmatrix} \begin{bmatrix} d_0 \\ d_1 \end{bmatrix} + \begin{bmatrix} a_0 \\ a_1 \end{bmatrix}$$

$$\therefore \begin{bmatrix} r_0 \\ r_1 \end{bmatrix} = \begin{bmatrix} r_0 \\ r_1 \end{bmatrix} + \left[\frac{J(r_0, r_1)}{d_0, d_1} \right] \begin{bmatrix} \Delta d_0 \\ \Delta d_1 \end{bmatrix} + \dots$$

desired next value found

found