$$\underline{\underline{\daleth}} + 4\daleth = 0 \begin{cases} \daleth_0 = \cos 2x & \beta_0 = 0 \\ \daleth_1 = \dfrac{1}{2}\sin 2x & \beta_1 = 1 \end{cases}$$

$$\text{Leg } \underbrace{1-x^2}\,\underline{\underline{\daleth}} - 2x\,\underline{\daleth} + \lambda\underbrace{\lambda+1}\daleth = 0 \begin{cases} \daleth_0 = \sum_m^{\mathbb{N}} (2x)^{2m} \dfrac{(-\lambda/2)_m ((1+\lambda)/2)_m}{(2m)!} & \beta_0 = 0 \\ \daleth_1 = \dfrac{1}{2}\sum_m^{\mathbb{N}} (2x)^{2m+1} \dfrac{((1-\lambda)/2)_m (1+\lambda/2)_m}{(2m+1)!} & \beta_1 = 1 \end{cases}$$

$$\text{Her } \underline{\underline{\daleth}} - 2x\,\underline{\daleth} + 2\lambda\daleth = 0 \begin{cases} \daleth_0 = \sum_m^{\mathbb{N}} (2x)^{2m} \dfrac{(-\lambda/2)_m}{(2m)!} & \beta_0 = 0 \\ \daleth_1 = \dfrac{1}{2}\sum_m^{\mathbb{N}} (2x)^{2m+1} \dfrac{((1-\lambda)/2)_m}{(2m+1)!} & \beta_1 = 1 \end{cases}$$

$$\underbrace{1-x^2}\,\underline{\underline{\daleth}} - 6x\,\underline{\daleth} - 4\daleth = 0 \begin{cases} \daleth_0 = \dfrac{1}{(1-x^2)^2} & \beta_0 = 0 \\ \daleth_1 = \dfrac{x - x^3/3}{(1-x^2)^2} & \beta_1 = 1 \end{cases}$$

$$\underline{\underline{\daleth}} + 3x\,\underline{\daleth} + 3\daleth = 0 \begin{cases} \daleth_0 = \sum_m^{\mathbb{N}} (-3x^2/2)^{\cancel{m}} & \beta_0 = 0 \\ \daleth_1 = \sum_m^{\mathbb{N}} x^{2m+1} \dfrac{(-3/2)^m}{(3/2)_m} & \beta_1 = 1 \end{cases}$$

$$\underbrace{1+4x^2}\,\underline{\underline{\daleth}} - 8\daleth = 0 \begin{cases} \daleth_0 = 1 + 4x^2 & \beta_0 = 0 \\ \daleth_1 = -\sum_m^{\mathbb{N}} x^{2m+1} \dfrac{(-4)^m}{(2m-1)(2m+1)} & \beta_1 = 1 \end{cases}$$

$$\underbrace{1+x^2}\,\underline{\underline{\daleth}} + 10x\,\underline{\daleth} + 20\daleth = 0 \begin{cases} \daleth_0 = \sum_m^{\mathbb{N}} x^{2m} \dfrac{-1^m (m+1)(2m+1)(2m+3)}{3} & \beta_0 = 0 \\ \daleth_1 = \sum_m^{\mathbb{N}} x^{2m+1} \dfrac{-1^m (m+1)(m+2)(2m+3)}{6} & \beta_1 = 1 \end{cases}$$

$$\underbrace{x^2+4}\,\underline{\underline{\daleth}} + 2x\,\underline{\daleth} - 12\daleth = 0 \begin{cases} \daleth_0 = 3\sum_m^{\mathbb{N}} x^{2m} \dfrac{(-1/4)^m (m+1)}{(2m-1)(2m-3)} & \beta_0 = 0 \\ \daleth_1 = x + \dfrac{5}{12}x^3 & \beta_1 = 1 \end{cases}$$

$$\underbrace{x^2-9}\,\underline{\underline{\daleth}} + 3x\,\underline{\daleth} - 3\daleth = 0 \begin{cases} \daleth_0 = \sum_m^{\mathbb{N}} (x^2/9)^{\cancel{m}} \dfrac{(3/2)_m}{2m-1} & \beta_0 = 0 \\ \daleth_1 = x & \beta_1 = 1 \end{cases}$$

$$\underline{\underline{\daleth}} + 2x\,\underline{\daleth} + 5\daleth = 0 \begin{cases} \daleth_0 = \sum_m^{\mathbb{N}} x^{2m} \dfrac{(-4)^m (5/4)_m}{(2m)!} & \beta_0 = 0 \\ \daleth_1 = \sum_m^{\mathbb{N}} x^{2m+1} \dfrac{(-4)^m (7/4)_m}{(2m+1)!} & \beta_1 = 1 \end{cases}$$

$$\underbrace{x^2+4}\,\underline{\underline{\daleth}} + 6x\,\underline{\daleth} + 4\daleth = 0 \begin{cases} \daleth_0 = \sum_m^{\mathbb{N}} x^{2m} \dfrac{m+1}{(-4)^m} & \beta_0 = 0 \\ \daleth_1 = \dfrac{1}{3} \sum_m^{\mathbb{N}} x^{2m+1} \dfrac{2m+3}{(-4)^m} & \beta_1 = 1 \end{cases}$$

$$2\,\underline{\underline{\daleth}} + x\,\underline{\daleth} - 4\daleth = 0 \begin{cases} \daleth_0 = 1 + x^2 + \dfrac{1}{12} x^4 & \beta_0 = 0 \\ \daleth_1 = 3x \sum_m^{\mathbb{N}} \dfrac{(-x^2/4)^{\cancel{m}}}{(2m-3)\,(2m-1)\,(2m+1)} & \beta_1 = 1 \end{cases}$$

$$\underbrace{1+2x^2}\,\underline{\underline{\daleth}} - 5x\,\underline{\daleth} + 3\daleth = 0 \begin{cases} \daleth_0 = 3 \sum_m^{\mathbb{N}} \dfrac{(-2x^2)^{\cancel{m}} (-1/4)_m}{(2m-3)\,(2m-1)} & \beta_0 = 0 \\ \daleth_1 = x + \dfrac{1}{3} x^3 & \beta_1 = 1 \end{cases}$$

$$\underline{\underline{\daleth}} + x^2\,\daleth = 0 \begin{cases} \daleth_0 = \sum_m^{\mathbb{N}} \left(\dfrac{x}{4}\right)^{2m} \dfrac{-1^m}{m!(3/4)_m} & \beta_0 = 0 \\ \daleth_1 = 4 \sum_m^{\mathbb{N}} \left(\dfrac{x}{4}\right)^{2m+1} \dfrac{-1^m}{m!(5/4)_m} & \beta_1 = 1 \end{cases}$$

$$\underbrace{1-4x^2}\,\underline{\underline{\daleth}} + 6x\,\underline{\daleth} - 4\daleth = 0 \begin{cases} \daleth_0 = 1 + 2x^2 & \beta_0 = 0 \\ \daleth_1 = x \sum_m^{\mathbb{N}} \dfrac{(4x^2)^{\cancel{m}} (1/4)_m}{(1+2m)\,(1-2m)} & \beta_1 = 1 \end{cases}$$

$$\underbrace{1+2x^2}\,\underline{\underline{\daleth}} + 3x\,\underline{\daleth} - 3\daleth = 0 \begin{cases} \daleth_0 = -\sum_m^{\mathbb{N}} \dfrac{(-2x^2)^{\cancel{m}} (3/4)_m}{2m-1} & \beta_0 = 0 \\ \daleth_1 = x & \beta_1 = 1 \end{cases}$$