

$$\frac{3}{2} l_2 = \prod_{i=1}^3 \frac{x - x_i}{x_2 - x_i} = \frac{x - x_0}{x_2 - x_0} \frac{x - x_1}{x_2 - x_1} \frac{x - x_3}{x_2 - x_3}$$

$$= \frac{x - 0}{2 - 0} \frac{x - 1}{2 - 1} \frac{x - 4}{2 - 4}$$

$$l_2 = -\frac{1}{4} x (x-1)(x-4)$$

$$l_3 = \prod_{i=1}^3 \frac{x - x_i}{x_3 - x_i} = \frac{x - x_0}{x_3 - x_0} \frac{x - x_1}{x_3 - x_1} \frac{x - x_2}{x_3 - x_2}$$

$$= \frac{x - 0}{4 - 0} \frac{x - 1}{4 - 1} \frac{x - 2}{4 - 2}$$

$$= \frac{1}{14} x (x-1)(x-2)$$

$$\rightarrow P_n(x) = -\frac{1}{8} e^0 (x-1)(x-2)(x-4) + \dots$$

$$\dots + \frac{1}{3} e^1 x (x-2)(x-4) + \dots$$

$$\dots - \frac{1}{4} e^2 x (x-1)(x-4) + \dots$$

$$\dots - \frac{1}{14} e^4 x (x-1)(x-2)$$