4

$$l_2(x) = \frac{x - x_0}{x_2 - x_0} \cdot \frac{x - x_1}{x_2 - x_1} \cdot \frac{x - x_3}{x_2 - x_3} = \frac{x+2}{0+2} \cdot \frac{x+1}{0+1} \cdot \frac{x-1}{0-1}$$

$$= -\frac{1}{2}(x+2)(x^2 - x) = -\frac{1}{2}(x^3 + x^2 - 2x)$$

$$l_2(x_0) = -\frac{1}{2}\left((-2)^3 + (-2)^2 - 2(-2)\right) = -\frac{1}{2}(-8 + 4 + 4) = 0 \neq P(x_0)$$

$$l_3(x) = \frac{x - x_0}{x_3 - x_0} \cdot \frac{x - x_1}{x_3 - x_1} \cdot \frac{x - x_2}{x_3 - x_2} = \frac{x+2}{1+2} \cdot \frac{x+1}{1+1} \cdot \frac{x-0}{1-0}$$

$$= \frac{1}{6} x (x+2)(x+1) = \frac{1}{6}(x^3 + 2x^2 + 2x)$$

$$l_3(x_0) = \frac{1}{6}\left((-2)^3 + 2(-2)^2 + 2(-2)\right) = \frac{1}{6}(-4) = \frac{2}{3} \neq P(x_0)$$

$$-8 \quad +8 \quad -4$$

$n \equiv 4$ ⟶ $4 \leq n \leq 5$

$$l_0(x) = \frac{x - x_1}{x_0 - x_1} \cdot \frac{x - x_2}{x_1 - x_2} \cdot \frac{x - x_3}{x_0 - x_3} \cdot \frac{x - x_4}{x_0 - x_4}$$

$$= \frac{x+1}{-2+1} \cdot \frac{x-0}{-2-0} \cdot \frac{x-1}{-2-1} \cdot \frac{x-2}{-2-2}$$