

P6578700 (5)

$$\begin{bmatrix} 1 & 0 & 0 & 0 & -1/6 & 11/3 \\ 0 & 1 & 0 & 0 & -1/2 & 13 \\ 0 & 0 & 1 & 0 & -1/3 & 28/3 \\ 0 & 0 & 0 & 0 & 1 & -10 \\ 0 & 0 & 0 & 1 & 0 & 1 \end{bmatrix} \xrightarrow{6 \times R_4}$$

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 2 \\ 0 & 1 & 0 & 0 & 0 & 8 \\ 0 & 0 & 1 & 0 & 0 & 6 \\ 0 & 0 & 0 & 0 & 1 & -10 \\ 0 & 0 & 0 & 1 & 0 & 1 \end{bmatrix} \begin{array}{l} R_1 + 1/6 R_4 \\ R_2 + 1/2 R_4 \\ R_3 + 1/3 R_4 \end{array}$$

$$a_1 = 2, b_1 = 8, c_1 = 6, a_2 = 1, c_2 = -10$$

$$S_0 = 2 + 8x + 6x^2 \quad \checkmark$$

$$S_1 = 1 - 10x^2 \quad \checkmark$$

$$S_2 = 2 - 8x + 6x^2 \quad \checkmark$$

$$\text{Check } S_0(-1) = 2 - 8 + 6 = 0 \quad \checkmark$$

$$S_0(-1/2) = 2 - 4 + 3/2 = -1/2 \quad \checkmark$$

$$S_0(-1/4) = 2 - 2 + 6/16 = 3/8 = 1 - 10/16 = S_1(-1/4) \quad \checkmark$$

$$S_1(0) = 0 \quad \checkmark$$

$$S_0'(-1/4) = 8 - 12/4 = 5 = -20 \cdot (-1/4) = S_1'(-1/4) \quad \checkmark$$

20 2) i) $h_0(x)$ satisfies $h_0(0) = 1$
 $h_0(-1/2) = h_0(1/2) = (2 - \sqrt{2})(2\sqrt{2} - 3)^{p-1-1}$
 $= (2 - \sqrt{2})$
 $h_0(1/2) = (2 - \sqrt{2})(2\sqrt{2} - 3)^{p-1-1} (2 - \sqrt{2})$

$$\begin{aligned} h_0(x) &= 1 + (x-0)(2-\sqrt{2} - 2+\sqrt{2})/1 \\ &\quad + 2(x-0)^2(2-\sqrt{2} - 2+\sqrt{2} + 2-\sqrt{2})/1^2 \\ &= 1 + 2x^2(2-2\sqrt{2}) \\ &= 1 - 4x^2(\sqrt{2}-1) \quad \checkmark \end{aligned}$$

W7 Wg Eq. 18-36