7

x_i:	-10	-5	0	5	10
$h(x_i)$:	3	-5	-1	-5	3

$$\begin{cases} P_0 = 1 \\ P_1 = x \\ P_2 = x^2 - 50 \end{cases} \quad \leftarrow 2 \text{ L } 11,6$$

$$w_2^*(x) = \sum_{k=0}^{2} a_k P_k \qquad a_k = \frac{\langle h, P_k \rangle}{\langle P_k, P_k \rangle}$$

$$a_0 = \frac{3-5-1-5+3}{5} = -1$$

$$a_1 = \frac{(3\cdot(-10)) + ((-5)\cdot(-5)) + ((-5)\cdot 5) + (3\cdot 10)}{(-10)^2 + (-5)^2 + 5^2 + 10^2} = 0$$

$$a_2 = \frac{(3\cdot 50) + ((-5)\cdot(-25)) + 50 + ((-5)\cdot(-25)) + (3\cdot 50)}{50^2 + (-25)^2 + (-50)^2 + (-25)^2 + 50^2} = \frac{12}{175}$$

$$w_2^*(x) = (-1)\cdot 1 + 0\cdot x + \frac{12}{175}(x^2 - 50) = \frac{12}{175}x^2 - \frac{17}{7}$$