i	x	y
0	-2	1
1	0	-2
2	1	2
3	2	1

$$w_{0,1} = \frac{\begin{vmatrix} y_0 & x_0-x \\ y_1 & x_1-x \end{vmatrix}}{x_1-x_0} = \frac{\begin{vmatrix} 1 & -2-x \\ -2 & 0-x \end{vmatrix}}{0-(-2)} = \frac{-x+2(-2-x)}{2} = \frac{-3x-4}{2} = -\frac{3}{2}x-2$$

$$w_{0,2} = \frac{\begin{vmatrix} y_0 & x_0-x \\ y_2 & x_2-x \end{vmatrix}}{x_2-x_0} = \frac{\begin{vmatrix} 1 & -2-x \\ 2 & 1-x \end{vmatrix}}{1+2} = \frac{1-x-2(-2-x)}{3} = \frac{5+x}{3} = \frac{x}{3}+\frac{5}{3}$$

$$w_{0,3} = \frac{\begin{vmatrix} y_0 & x_0-x \\ y_3 & x_3-x \end{vmatrix}}{x_3-x_0} = \frac{\begin{vmatrix} 1 & -2-x \\ 1 & 3-x \end{vmatrix}}{3+2} = \frac{3-x+2+x}{5} = 1$$

$$w_{0,1,2} = \frac{\begin{vmatrix} w_{01} & x_1-x \\ w_{02} & x_2-x \end{vmatrix}}{x_2-x_1} = \frac{\begin{vmatrix} -\frac{3}{2}x-2 & 0-x \\ \frac{1}{3}x+\frac{5}{3} & 1-x \end{vmatrix}}{1}$$

$$= \left(-\frac{3}{2}x-2\right)(1-x)+x\left(\frac{1}{3}x+\frac{5}{3}\right)$$

$$= -\frac{3}{2}x-2+\frac{3}{2}x^2+2x+\frac{1}{3}x^2+\frac{5}{3}x = \frac{11}{6}x^2+\frac{13}{6}x-2$$

$$w_{0,1,3} = \frac{\begin{vmatrix} w_{01} & x_1-x \\ w_{03} & x_3-x \end{vmatrix}}{x_3-x_1} = \frac{\begin{vmatrix} -\frac{3}{2}x-2 & 0-x \\ 1 & 3-x \end{vmatrix}}{3-0}$$

$$= \frac{\left(-\frac{3}{2}x-2\right)(3-x)+x}{3}$$

$$= \frac{1}{3}\left(-\frac{9}{2}x+\frac{3}{2}x^2-6+2x+x\right) = \frac{1}{2}x^2-\frac{1}{2}x-2$$

$$w_{0,1,2,3} = \frac{\begin{vmatrix} w_{0,1,2} & x_2-x \\ w_{0,1,3} & x_3-x \end{vmatrix}}{x_3-x_2} = \frac{\begin{vmatrix} \frac{11}{6}x^2+\frac{13}{6}x-2 & 1-x \\ \frac{1}{2}x^2-\frac{1}{2}x-2 & 3-x \end{vmatrix}}{3-1}$$

$$= \frac{1}{2}\left[\left(\frac{11}{6}x^2+\frac{13}{6}x-2\right)(3-x)\right]$$

$$= \frac{1}{2}\left[\frac{11}{2}x^2+\frac{13}{2}x-6-\frac{11}{6}x^3-\frac{13}{6}x^2+2x-\left(\frac{1}{2}x^2-\frac{1}{2}x-2-\frac{1}{2}x^3+\frac{1}{2}x^2+2x\right)\right]$$

$$= -\frac{2}{3}x^3+\frac{7}{6}x^2+\frac{7}{2}x-2$$