$$P_2(x) = Ax^2 + Bx + C$$

$$\int_{-h}^{h} P_2(x) = \frac{Ax^3}{3} + \frac{Bx^2}{x^2} + Cx \Big|_{-h}^{h} \rightarrow I$$

$$= \left(\frac{Ah^3}{3} + \cancel{\frac{Bh^2}{2}} + ch\right) - \left(-\frac{Ah^3}{3} + \cancel{\frac{Bh^2}{2}} - ch\right) = 2A\frac{h^3}{3} + 2ch = \frac{h}{3}\left(2Ah^2 + 6C\right)$$

$$I = 2A\frac{h^3}{3} + 2Ch$$

donde : ① $(-h, f_0)$, ② $(0, f_1)$ y ③ (h, f_2) $\Big\}$ evaluados en $P_2(x)$

$(-x, y_0)$, $(0, y_1)$ y (x, y_2)

① $Ax^2 + Bx + C = A(-x)^2 + B(-x) + C$

$= Ax^2 - Bx + C$

$Ah^2 - Bh + C$

③ $Ax^2 + Bx + C = Ax^2 + Bx + C$

$Ah^2 + Bh + C$

② $Ax^2 + Bx + C = A(0)^2 + B(0) + C$ $\Big\}$ y_1 (ó f_1)

$= C$

$$y_0 = Ah^2 - \cancel{Bh} + C$$
$$y_2 = Ah^2 + \cancel{Bh} + C$$
$$2Ah^2 + 2C$$

$2Ah^2 + 2C = y_0 + y_2$

$2Ah^2 = (y_0 + y_2) - 2C$ ④

reemplazando ④ en I ...

$$I = \frac{h}{3}\left[(y_0 + y_2) - 2C + 6C\right] = \frac{h}{3}\left[(y_0 + y_2) + 4C\right] = \frac{h}{3}\left[(y_0 + y_2) + 4y_1\right] = \frac{h}{3}\left[y_0 + 4y_1 + y_2\right]$$

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