EJERCICIO 02. * cálculos numéricos en código.

3 PUNTOS : $\{f_n, t_n\}$; $\{f_{n-1}, t_{n-1}\}$; $\{f_{n-2}, t_{n-2}\}$.

- $P_2(t) = f_n \left[\frac{t - t_{n-1}}{t_n - t_{n-1}}\right]\left[\frac{t - t_{n-2}}{t_n - t_{n-2}}\right] + f_{n-1}\left[\frac{t - t_n}{t_{n-1} - t_n}\right]\left[\frac{t - t_{n-2}}{t_{n-1} - t_{n-2}}\right] + f_{n-2}\left[\frac{t - t_n}{t_{n-2} - t_n}\right]\left[\frac{t - t_{n-1}}{t_{n-2} - t_{n-1}}\right]$

$\Rightarrow P_2(t) = \frac{f_n}{2h^2}[t - t_{n-1}][t - t_{n-2}] - \frac{f_{n-1}}{h^2}[t - t_n][t - t_{n-2}] + \frac{f_{n-2}}{2h^2}[t - t_n][t - t_{n-1}]$.

- $y_{n+1} = y_n + \int_{t_n}^{t_{n+1}} P_2(t)\,dt = y_n + \frac{23}{12}h f_n - \frac{4}{3}h f_{n-1} + \frac{5}{12}h f_{n-2}$.

4 PUNTOS : $\{f_n, t_n\}$; $\{f_{n-1}, t_{n-1}\}$; $\{f_{n-2}, t_{n-2}\}$; $\{f_{n-3}, t_{n-3}\}$.

- $P_3(t) = f_n \left[\frac{t - t_{n-1}}{t_n - t_{n-1}}\right]\left[\frac{t - t_{n-2}}{t_n - t_{n-2}}\right]\left[\frac{t - t_{n-3}}{t_n - t_{n-3}}\right] + f_{n-1}\left[\frac{t - t_n}{t_{n-1} - t_n}\right]\left[\frac{t - t_{n-2}}{t_{n-1} - t_{n-2}}\right]\left[\frac{t - t_{n-3}}{t_{n-1} - t_{n-3}}\right]$

$+ f_{n-2}\left[\frac{t - t_n}{t_{n-2} - t_n}\right]\left[\frac{t - t_{n-1}}{t_{n-2} - t_{n-1}}\right]\left[\frac{t - t_{n-3}}{t_{n-2} - t_{n-3}}\right] + f_{n-3}\left[\frac{t - t_n}{t_{n-3} - t_n}\right]\left[\frac{t - t_{n-1}}{t_{n-3} - t_{n-1}}\right]\left[\frac{t - t_{n-2}}{t_{n-3} - t_{n-2}}\right]$

$\Rightarrow P_3(t) = \frac{f_n}{6h^3}[t - t_{n-1}][t - t_{n-2}][t - t_{n-3}] + \left[\frac{-f_{n-1}}{2h^3}\right][t - t_n][t - t_{n-2}][t - t_{n-3}]$

$+ \frac{f_{n-2}}{2h^3}[t - t_n][t - t_{n-1}][t - t_{n-3}] - \frac{f_{n-3}}{6h^3}[t - t_n][t - t_{n-2}][t - t_{n-2}]$.

- $y_{n+1} = y_n + (55h/24) f_n + (-59h/24) f_{n-1} + (37h/24) f_{n-2} - (3h/8) f_{n-3}$.