$$\int_k^{k+1} P(t)\,dt = \int_k^{k+1} y_1 \frac{(t-t_2)(t-t_3)}{(t_1-t_2)(t_1-t_3)} + y_2 \frac{(t-t_1)(t-t_3)}{(t_2-t_1)(t_2-t_3)} + \cdots$$

$$\cdots + y_3 \frac{(t-t_1)(t-t_2)}{(t_3-t_1)(t_3-t_2)}$$

$t_n = f(t_n, f_n)$

$$\rightarrow \int_k^{k+1} U_{n-1} \frac{(t - f(t_n, f_n))}{\left(f(t_{n-1}, f_{n-1}) - f(t_n, f_n)\right)} + U_n \frac{(t - f($$