(4)

$$F(x) - P(x) = \frac{F^{(n+1)}(\xi(x))}{(n+1)!} \prod_{k=0}^{n} (x - x_k)$$

Demostración:

$$g(t) = f(t) - P(t) - \left(F(x) - P(x)\right) \prod_{k=0}^{n} \frac{t - x_k}{x - x_k}$$

$$g^{(n)}(\xi) = F^{(n)}(\xi) - \left(F(x) - P(x)\right) \cdot \frac{n!}{\prod_{k=0}^{n} (x - x_k)}$$

Despejando...

$$\left(F(x) - P(x)\right) = \frac{F^{(n+1)}(\xi)}{(n+1)!} \prod_{k=0}^{n} (x - x_k)$$