Punto 1.5

$$F^{IV}(x) \cong \frac{F(x+2h) - 4F(x+h) + 6F(x) - 4F(x-h) + F(x-2h)}{h^4}$$

$$F(x+2h) = F(x) + 2hF'(x) + \frac{4h^2}{2}F''(x) + \frac{8h^3}{3!}F'''(x) + \frac{16h^4}{4!}F^{IV}(x) + \dots$$

$$F(x+h) = F(x) + hF'(x) + \frac{h^2}{2}F''(x) + \frac{h^3}{3!}F'''(x) + \frac{h^4}{4!}F^{IV}(x) + \dots$$

$$-4F(x+h) = -4F(x) - 4hF'(x) - 2h^2F''(x) - \frac{4h^3}{3!}F'''(x) - \frac{4h^4}{4!}F^{IV}(x)$$

$$-4F(x+h) = -4F(x) - 4hF'(x) - 2h^2F''(x) - \frac{2}{3}h^3F'''(x) - \frac{1}{6}h^4F^{IV}(x) - \dots$$

$$6F(x) = 6F(x) + 6F'(x) + \frac{6F''(x)}{2!} + \frac{6F'''(x)}{3!} + \frac{6F^{IV}(x)}{4!}$$

$$6F(x) = 6F(x) + 6F'(x) + 3F''(x) + F'''(x) + \frac{1}{4}F^{IV}(x) + \dots$$

$$F(x-h) = F(x) - hF'(x) + \frac{h^2}{2}F''(x) - \frac{h^3}{3!}F'''(x) + \frac{h^4}{4!}F^{IV}(x) - \dots$$

$$-4F(x-h) = -4F(x) + 4hF'(x) - \frac{4h^2}{2}F''(x) + \frac{4h^3}{3!}F'''(x) - \frac{4h^4}{4!}F^{IV}(x) + \dots$$

$$-4F(x-h) = -4F(x) + 4hF'(x) - 2h^2F''(x) + \frac{2}{3}h^3F'''(x) - \frac{1}{6}F^{IV}(x) + \dots$$

$$F(x-2h) = F(x) - 2hF'(x) + \frac{4h^2}{2}F''(x) - \frac{8h^3}{3!}F'''(x) + \frac{16h^4}{4!}F^{IV}(x) + \dots$$

$$F(x+2h) + F(x-2h) =$$

$$= 2F(x) + \frac{8h^2}{2}F''(x) + \frac{32h^4}{4!}F^{IV}(x) + \dots$$

$$= 2F(x) + 4h^2F''(x) + \frac{8}{6}h^4F^{IV}(x) + \dots$$

$$= 2F(x) + 4h^2F''(x) + \frac{4}{3}h^4F^{IV}(x) + \dots$$

$$-4F(x+h) - 4F(x-h) =$$

$$-8F(x) - 4h^2F''(x) - \frac{2}{6}h^4F^{IV}(x) - \dots$$

$$-8F(x) - 4h^2F''(x) - \frac{1}{3}h^4F^{IV}(x) - \dots$$

$$F(x+2h) + F(x+2h) - 4F(x+h) - 4F(x-h) + 6F(x) =$$

$$2F(x) + 4h^2F''(x) + \frac{4}{3}h^4F^{IV}(x) + \dots$$

$$-8F(x) - 4h^2F''(x) - \frac{1}{3}h^4F^{IV}(x) - \dots$$

$$+6F(x)$$

$$0F(x) + 0F''(x) + \frac{3}{3}h^4F^{IV}(x) + \dots$$

$$F^{IV}(x) + O(h^2) = F(x+2h) - 4F(x+h) + 6F(x) - 4F(x-h) + F(x-2h) \,/\, h^4$$

$$F^{IV}(x) \approx F(x+2h) - 4F(x+h) + 6F(x) - 4F(x-h) + F(x-2h) \,/\, h^4$$

$$F^{IV}(x) \approx F(x+2h) - 4F(x+h) + 6F(x) - 4F(x-h) + F(x-2h) \,/\, h^4$$