

ES N1 PAG 358

$$p(x) = x^3 - 4x^2 + 5 \quad (x+2) \quad x_0 = -2$$

$$p'(x) = 3x^2 - 8x$$

$$p(x) = p(x_0) + p'(x_0)(x-x_0) +$$

$$p''(x) = 6x - 8$$

$$+ \frac{1}{2!} p''(x_0)(x-x_0)^2 + \frac{1}{3!} p'''(x_0)(x-x_0)^3$$

$$p'''(x) = 6$$

$$p(-2) = (-2)^3 - 4(-2)^2 + 5 = -19$$

$$p''(-2) = 6(-2) - 8 = -20$$

$$p'(-2) = 3(-2)^2 - 8(-2) = 28$$

$$p'''(-2) = 6$$

$$p(x) = -19 + 28(x+2) - 10(x+2)^2 + (x+2)^3$$

ES. N5

$$x_0 = 0 \quad \text{ordine } 4$$

$$f(x) = \frac{1}{1+x^2}$$

$$f(x) = f(0) + f'(0)x + \frac{f''(0)}{2}x^2 + \frac{f'''(0)}{6}x^3 + \frac{f^{(4)}(0)}{24}x^4$$

$$f(x) = \frac{1}{1+x^2} \quad f(0) = 1$$

$$f'(x) = \frac{-2x}{(1+x^2)^2} \quad f'(0) = 0$$

$$f''(x) = \frac{-2(1+x^2)^2 + 2x[2(1+x^2)2x]}{(1+x^2)^4} = \frac{-2 + 6x^2}{(1+x^2)^3} \quad f''(0) = -2$$

$$f'''(x) = \frac{12x(1+x^2)^3 - 6x^2[3(1+x^2)^2(2x)]}{(1+x^2)^8}$$

$$= \frac{\cancel{(1+x^2)^2} [12x + 12x^3 - 36x^3]}{(1+x^2)^{8-6}} = \frac{12x - 24x^3}{(1+x^2)^6}$$

$$f^{(4)}(x) = \frac{(12 - 72x^2)(1+x^2)^6 - (12x - 24x^3)6(1+x^2)^5 2x}{(1+x^2)^{14}}$$

$$= \frac{12 + 12x^2 - 72x^2 - 72x^4 - 144x^2 + 288x^4}{(1+x^2)^7} \quad f^{(4)}(0) = 12$$

$$f(x) = 1 + \frac{1}{2}(-2)x^2 + \frac{1}{24}12x^4 = 1 - x^2 + \frac{1}{2}x^4$$

ES 26

$$\sqrt{1,07}$$

al terzo grado

2/2

$$1,07 = 1 + 0,07$$

$$x_0 = 0,07$$

$$f(x) = \sqrt{1+x}$$

$$f(x) = f(x_0) + f'(x_0)(x-x_0) + \frac{1}{2} f''(x_0)(x-x_0)^2 + \frac{f'''(x_0)}{6} (x-x_0)^3$$

$$f'(x) = \frac{-1}{2\sqrt{1+x}}$$