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Desarrollo parcial #4

1.

X	Y
1	1,7
2	3
3	4
4	4,6
5	5

2. Ejercicio 2 punto: $0,100000000000183 + 1,762857142857126X - 0,157142857142857X^2$

3 Interpolación de lagrange

Estimación del valor: 4,5 4,75

Grado 1 y 2

	X	Y
f_1	1	1,4
x_0	3	1,5
x_1	5	1,8
x_2	7	1,9
	9	2,2

Fórmula $P_n(x) = \sum_{j=0}^{n-1} F(x_i) L_i(x)$

$$L_i(x) = \prod_{\substack{j=0 \\ i \neq j}}^{n} \frac{x - x_j}{x_i - x_j}$$

Datos

$n = 4$

$j = 1, 2, 3$

$j = 0, 1, 2, 3$

Grado 1

$$F_1(x) = \frac{x - x_1}{x_0 - x_1} F(x_0) + \frac{x - x_0}{x_1 - x_0} F(x_1)$$

$$F_1(x) = \left(\frac{x - 5}{3 - 5}\right)(1,5) + \left(\frac{x - 3}{5 - 3}\right)(1,8)$$

$$F_1(x) = \left(\frac{x - 5}{-2}\right)(1,5) + \left(\frac{x - 3}{2}\right)(1,8)$$

$x_0 = 3$ $\quad x_2 = 7$

$x_1 = 5$

$$\rightarrow -\frac{1.5}{2}x + \frac{7.5}{2} + \frac{1.8}{2}x - \frac{3.4}{2}$$

$$F_1(x) = \frac{3}{2}x + \frac{4.1}{2}$$

Grado 2

$$f_2(x) = \frac{(x-x_1)(x-x_2)}{(x_0-x_1)(x_0-x_2)} f(x_0) + \frac{(x-x_0)(x-x_2)}{(x_1-x_0)(x_1-x_2)} f(x_1)$$

$$+ \frac{(x-x_0)(x-x_1)}{(x_2-x_0)(x_2-x_1)} f(x_2)$$

$$f_2(x) = \frac{(x-5)(x-7)}{(3-5)(3-7)}(1.5) + \frac{(x-3)(x-7)}{(5-3)(5-7)}(1.8)$$

$$+ \frac{(x-3)(x-5)}{(7-3)(7-5)}(1.9)$$

$$f_2(x) = \frac{(x-5)(x-7)}{(8)}(1.9) + \frac{(x-3)(x-7)}{-4}(1.8)$$

$$+ \frac{(x-3)(x-5)}{(8)}(1.9)$$

$$f_2(x) = \frac{(x^2-12x+35)}{8}(1.9) + \frac{(x^2-10x+21)}{-4}(1.8)$$

$$+\frac{(x^2-8x+15)}{8}(1,9)$$

$$F_2(x)=\frac{1,9x^2}{8}-\frac{22,8}{8}x+\frac{66.5}{8}+\frac{1.8x^2}{4}+\frac{18}{4}x-\frac{37,8}{4}$$

$$+\frac{1,9x^2}{8}-\frac{15,2}{8}x+\frac{28,5}{8}$$

$$F_2(x)=0,925x^2-0,25x+2,425$$

~~$F_1(x)\left(\frac{4,75-5}{3-5}\right)(1,5)+\left(\frac{4,75-3}{5-3}\right)(1,8)$~~

$$F_1(x)=\frac{3}{2}(4,75)+\frac{4,1}{2}=9,175 \rightarrow F_1(x)$$

$$F_2(x)=0,925(4,75)^2-0,25(4,75)+2,425$$

$$=22,1078125 \rightarrow F_2(x)$$

Día Mes Año