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Atividade - 27/07/2020

- Fórmula de Lagrange

X_i	0	0,5	1
$F(X_i)$	1,3	2,5	0,9

* $P_2(X)$ e $F(0,8)$

- Polinômio de Lagrange

$$P_2(X) = Y_0 l_0(X) + Y_1 l_1(X) + Y_2 l_2(X)$$

$$\Rightarrow l_0(X) = \frac{(X-X_1)(X-X_2)}{(X_0-X_1)(X_0-X_2)} = \frac{(X-0,5)(X-1)}{(0-0,5)(0-1)}$$

$$l_0(X) = \frac{X^2 - 1,5X + 0,5}{0,5}$$

$$\Rightarrow l_0(x) = \frac{(x-x_1)(x-x_2)}{(x_0-x_1)(x_0-x_2)} = \frac{(x-0,5)(x-1)}{(0-0,5)(0-1)}$$

$$l_0(x) = \frac{x^2 - 1,5x + 0,5}{0,5}$$

$$\Rightarrow l_1(x) = \frac{(x-x_0)(x-x_2)}{(x_1-x_0)(x_1-x_2)} = \frac{(x-0)(x-1)}{(0,5-0)(0,5-1)}$$

$$l_1(x) = \frac{x^2-x}{-0,25}$$

$$\Rightarrow l_2(x) = \frac{(x-x_0)(x-x_1)}{(x_2-x_0)(x_2-x_1)} = \frac{(x-0)(x-0,5)}{(1-0)(1-0,5)}$$

$$l_2(x) = \frac{x^2-0,5x}{0,5}$$

$$\rightarrow P_2(x) = 1,3 \cdot \left(\frac{x^2-1,5x+0,5}{0,5}\right) + 2,5\left(\frac{x^2-x}{-0,25}\right) + 0,9\left(\frac{x^2-0,5x}{0,5}\right)$$

$\rightarrow P_2(x) = 2,6x^2 - 3,9x + 1,3 - 10x^2 + 10x + 1,8x^2 - 0,9x$

$\rightarrow P_2(x) = -5,6x^2 + 5,2x + 1,3$

$\therefore P_2(x) = -5,6x^2 + 5,2x + 1,3$

- $F(0,8)$

$F(0,8) \approx P_2(0,8) = 1,876$