Evaluar f(2) usando la interpolacion lineal, cuatratica y cúbica

X	f(X
1	0
4	1.3862943
5	1.609438
6	1.791752

Lineal

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

$$F(2) = \frac{1.38624-0}{4-1}(2-1)+0 = 0.462098$$

Cuadratica

$$f_2(x) = b_0+b_1(x-x_0)+b_2(x-x_0)(x-x_1)$$

$$b_0 = f(x_0) = 0$$

$$b_1 = \frac{f(x_1)-f(x_0)}{x_1-x_0} = \frac{1.386294-0}{4-1} = 0.462098$$

$$b_2 = \frac{\frac{f(x_2)-f(x_1)}{x_2-x_1}-\frac{f(x_1)-f(x_0)}{x_1-x_0}}{x_2-x_0} = \frac{\frac{1.609438-1.386294}{5-4}-\frac{1.386294-0}{4-1}}{5-1} = -0.0597385$$

$$f_2(x) = 0+0.462098(2-1)+(-0.0597385)(2-1)(2-4$$

$$f_2(2) = 0+0.462098+0.119477 = 0.581575$$

Cúbica

$$f(x) = f(x_0) + (x - x_0) f(x_1, x_0) + (x - x_0)(x - x_1) f(x_2, x_1, x_0) + (x - x_0)(x - x_1)(x - x_2) f(x_3, x_2, x_1, x_0)$$

$$f(x_3, x_2, x_1, x_0) = \frac{f(x_3, x_2, x_1) - f(x_3, x_2, x_0)}{x_1 - x_0} = \frac{\frac{f(x_1, x_2) - f(x_2, x_1)}{x_2 - x_1} - \frac{f(x_3, x_2) - f(x_2, x_0)}{x_2 - x_0}}{x_3 - x_0}$$

$$b = \frac{\frac{\frac{f(x_3) - f(x_2)}{x_3 - x_2} - \frac{f(x_2) - f(x_1)}{x_2 - x_1}}{} - \frac{\frac{f(x_3) - f(x_2)}{x_3 - x_2} - \frac{f(x_2) - f(x_0)}{x_2 - x_0}}{}}{x_3 - x_0}$$

$b_2 = 0.047792$

$f(x) = 0.628767$