

$$f(x) = \ln(x) \quad \text{en } [1, 2]$$

a) Tabla de diferencias divididas

$x_0 = 1$	$f(1) = 0$	$f'(1) = 1$	$f[1, 1, 2] = -0.31$	$f[1, 1, 2, 2] = 0.12$
$x_1 = 1$	$f(1) = 0$	$f[1, 2] = 0.69$	$f[1, 2, 2] = -0.19$	
$x_2 = 2$	$f(2) = 0.69$	$f[2, 2] = f'(2) = 0.5$		
$x_3 = 2$	$f(2) = 0.69$			

$$p(x) = f(1) + f[1, 1](x-1) + f[1, 1, 2](x-1)^2 + f[1, 1, 2, 2](x-1)^2(x-2)$$

$$= (x-1) - 0.31(x-1)^2 + 0.12(x-1)^2(x-2)$$

b) Se usa la fórmula de acotación del error de Hermite.

Reemplazando: $E(x) \leq \frac{M}{4!} (x-1)^2 (x-2)^2 \quad \text{con } x \in [1, 2]$

donde $M = \max_{x \in [1, 2]} |f^{(4)}(x)|$

Como $M = \max_{x \in [1, 2]} \left| \frac{-6}{x^4} \right| = 6$, se tiene:

$$|E(x)| \leq \frac{6}{4!} (x-1)^2 (x-2)^2 \leq \frac{1}{4} \left(\frac{1}{2}\right)^2 \left(\frac{1}{2}\right) = 0.016 \quad \text{con } x \in [1, 2]$$