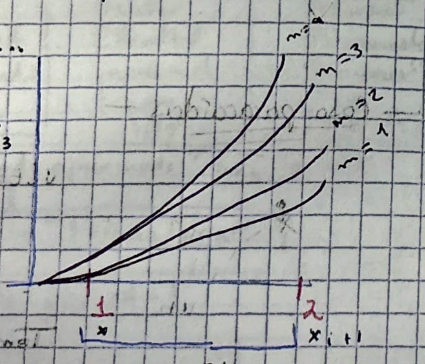
Sea $f(x) = x^m$

Donde m puede ser $m = 1, 2, 3, 4 \ldots$ en el rango $x = 1$ a 2 la aproximación usando la serie de taylor de primer orden

$$f(x_{i+1}) \cong f(x_i) + f'(x_i)h = x_i^m + m x_i^{m-1} h$$

$$R_1 = \frac{f''(x_i)}{2!}h^2 + \frac{f^{(3)}(x_i)(h^3)}{3!} + \ldots$$

$$= \frac{m(m-1)}{2!} x_i^{m-2} h^2 + \frac{m(m-1)(m-2)x_i^{m-3}}{3!} h^3 + \ldots$$



Caso particular -

m	$f(x_{i+1})$	$f(x_{i+1}=2)$ aprox	R
1	2	2	0
2	4	3	1
3	8	4	4
4	16	5	9

$(2)^2 = 4$ $\qquad f(2) = (1)^2 + (2)(1)(1) = 3$

$(2)^3 =$ $\qquad f(2) = (1)^3 + (3)(1)(1) = 4$

$(2)^4 =$ $\qquad f(4) = (1)^4 + 4(1)^{4-1}(1) = 5$

Cuando cambio h

$f(x_i + h) = f(x_i) + f'(x_i)h$

$h = x_{i+1} - x_i$

$x_{i+1} = x_i + h$

h	m	$f(x_{i+1}=2)$ ①	$f(x_{i+1}=2)$ aprox ②	R ③
0.5	4	5.0625	3	2.0625
0.25		9.37	2	0.4414
0.1		13.0321	1.4	0.064
0.01		15.6823	1.04	0.0006

① Como lo restamos -2, entonces:

$2 - 0.5 = 1.5$

- $(1.5)^4 = 5.0625$

$(1.5 + 0.25)^4 = 2.44$

- $(0.5)^4 = 0.0625$