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Método Punto Fijo 100

$x = \cos x$ $x_0 = 0$ $E_a \leq 1\%$

i	x_i	$g(x)$
0	0	1
1	1	0.5403
2	0.5403	0.8576
3	0.8576	0.6543
4	0.6543	0.7935
5	0.7935	0.7014
6	0.7014	0.764
7	0.764	0.7221
8	0.7221	0.7504
9	0.7504	0.7314
10	0.7314	0.7442
11	0.7442	0.7356
12	0.7356	0.7414
13	0.7414	

La raiz aproximada es: 0.7414

$$E_a = \left| \frac{0.7414 - 0.7356}{0.7414} \right| \times 100 = 0.7823\%$$

N-R

$f(x) = e^x - \pi x$, $x_0 = 0.5$

$f'(x) = e^x - \pi$

i	x_i	$x_i - \frac{f(x_i)}{f'(x_i)}$
0	0.5	0.5522
1	0.5522	0.5538
2	0.5538	

Raiz aproximada es: 0.5538

$E_a = \left|\frac{0.5538 - 0.5522}{0.5538}\right| \times 100 = 0.2889\%$

Secante

$f(x) = \text{arctan}\, x - 2x + 1$ $x_0 = 0$, $x_1 = 1$

i	x_i	$x_i - \frac{f(x_i)[x_{i-1} - x_i]}{f(x_{i-1}) - f(x_i)}$
0	0	----
1	1	0.8233
2	0.8233	0.8523
3	0.8523	0.8532
4	0.8532	

Raiz aproximada es: 0.8532

$E_a = \left|\frac{0.8532 - 0.8523}{0.8532}\right| \times 100 = 0.1055\%$

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Secante

$f(x) = x^2 - 4$, $x_0 = 4$, $x_1 = 3$

i	x_i	$x_i - \frac{f(x_i)[x_{i-1} - x_i]}{f(x_{i-1}) - f(x_i)}$
0	4	- - - -
1	3	2.2857
2	2.2857	2.0541
3	2.0541	2.0036
4	2.0036	2
5	2	

La raiz aproximada es: 2

(aunque es el valor real)

$$E_a = \left| \frac{2 - 2.0036}{2} \right| \times 100 = 0.18\%$$

$x = 0.7391$

$x = 0.739085$

PUNTO FISO $x = \cos x$,

N-R $f(x) = e^x - \pi x$, $x_0 = 0.5$, $x = 0.5538$

SECANTE $f(x) = \arctan x - 2x + 1$, $x_0 = 0$, $x_1 = 1$, $x = 0.8531691208$ (3ª)

SECANTE $f(x) = x^2 - 4$, $x_0 = 4$, $x_1 = 3$ $x = 2.0001$