

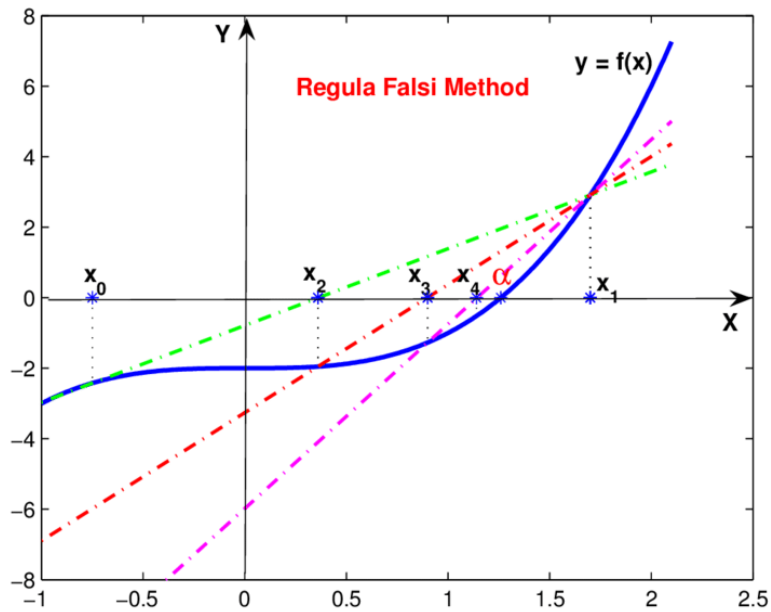
ANÁLISIS NUMÉRICO MÉTODO POSICIÓN FALSA

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Condiciones



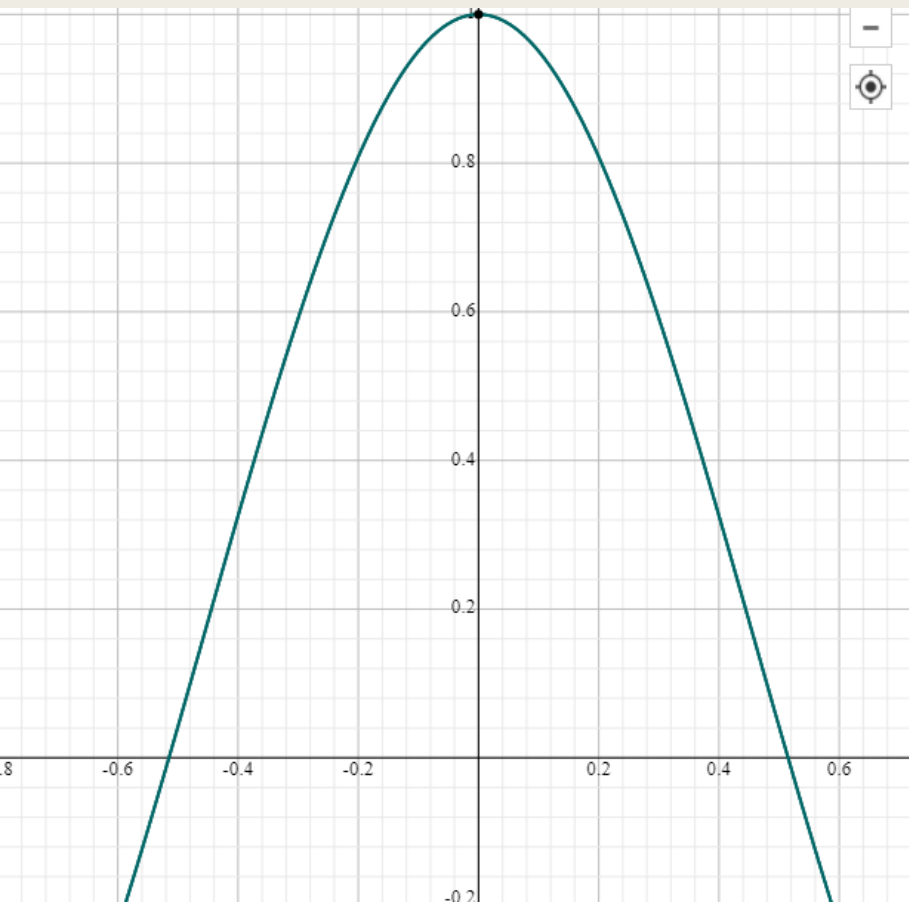
Este método conserva las condiciones que posee el método de bisección



Debe existir seguridad sobre la continuidad de la función $f(x)$ en el intervalo $[a, b]$



$f(a)$ y $f(b)$ deben tener signos opuestos



$$\cos(2x)^2 - x^2$$

```
Primer intervalo 0
Segundo Intervalo 1
Error torelable: 0.00000001
Iteracion-1, x2 = 0.54739876 and f(x2) = -0.08967393
Iteracion-2, x2 = 0.50235098 and f(x2) = 0.03530387
Iteracion-3, x2 = 0.51507613 and f(x2) = -0.00039935
Iteracion-4, x2 = 0.51493379 and f(x2) = -0.00000147
Iteracion-5, x2 = 0.51493327 and f(x2) = -0.00000001
```

Raiz requerida es: 0.51493327

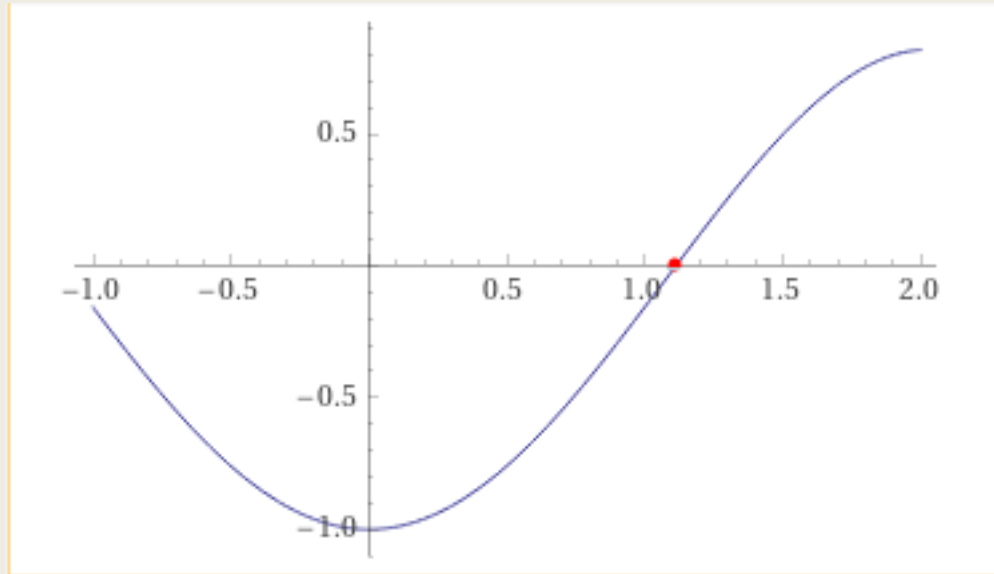
```
Primer intervalo 0
Segundo Intervalo 1
Error torelable: 0.0000000000000001
Iteracion-1, x2 = 0.5473987634095686 and f(x2) = -0.0896739317804612
Iteracion-2, x2 = 0.5023509762366731 and f(x2) = 0.0353038683859859
Iteracion-3, x2 = 0.5150761254016748 and f(x2) = -0.0003993538308484
Iteracion-4, x2 = 0.5149337898713885 and f(x2) = -0.0000014682418709
Iteracion-5, x2 = 0.5149332665903326 and f(x2) = -0.0000000053931492
Iteracion-6, x2 = 0.5149332646682158 and f(x2) = -0.0000000000198101
Iteracion-7, x2 = 0.5149332646611554 and f(x2) = -0.0000000000000727
Iteracion-8, x2 = 0.5149332646611295 and f(x2) = -0.0000000000000004
Iteracion-9, x2 = 0.5149332646611294 and f(x2) = 0.0000000000000000
```

```
Raiz requerida es: 0.5149332646611294
```

```
Primer intervalo 0  
Segundo Intervalo 1  
Error torable: 0.00000000000000000000000000000001  
Iteracion-1, x2 = 0.54739876340956861167086344721611 and f(x2) = -0.08967393178046115242985081295046  
Iteracion-2, x2 = 0.50235097623667313015971558343153 and f(x2) = 0.03530386838598592591509373050940  
Iteracion-3, x2 = 0.51507612540167480030817159786238 and f(x2) = -0.00039935383084843678602737782057  
Iteracion-4, x2 = 0.51493378987138849200988488519215 and f(x2) = -0.00000146824187086114221756361076  
Iteracion-5, x2 = 0.51493326659033256120778787590098 and f(x2) = -0.0000000539314920500189032281924  
Iteracion-6, x2 = 0.51493326466821576214982769670314 and f(x2) = -0.0000000001981009800644528695557  
Iteracion-7, x2 = 0.51493326466115540984702647161997 and f(x2) = -0.00000000000007271960811294775340  
Iteracion-8, x2 = 0.5149332646611295416505527100528 and f(x2) = -0.0000000000000038857805861880479  
Iteracion-9, x2 = 0.51493326466112943062825024753693 and f(x2) = 0.000000000000000000000000000000
```

Raiz requerida es: 0.51493326466112943062825024753693

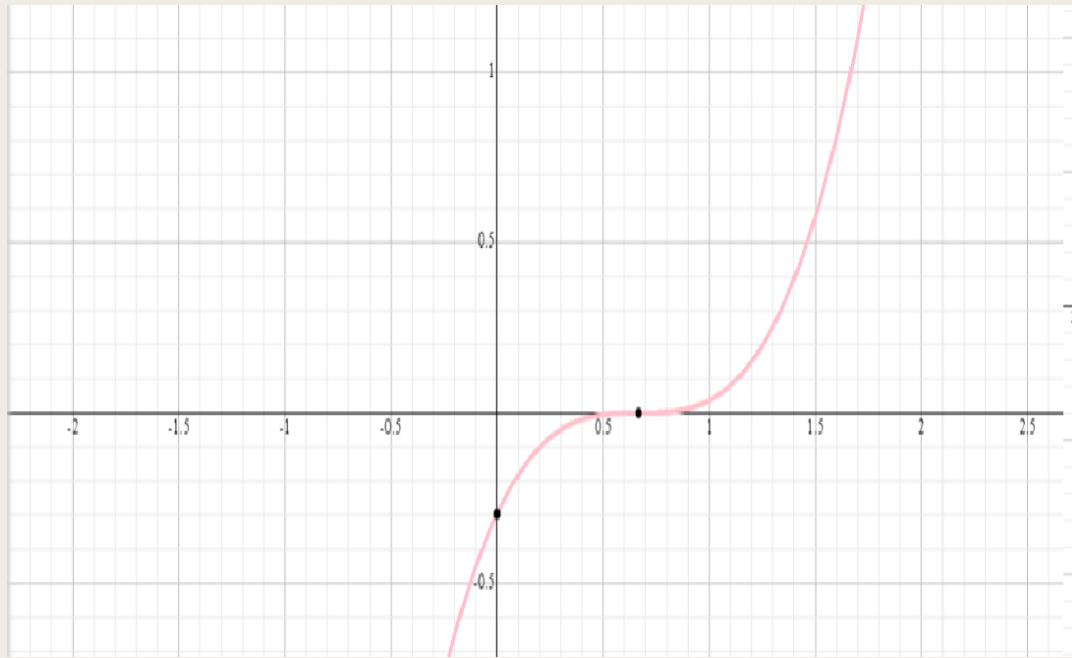
$$f(x)=x\sin(x)-1 \text{ en } [-1,2]$$



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 1: Python
Iteracion0-1390150, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390151, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390152, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390153, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390154, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390155, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390156, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390157, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390158, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390159, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390160, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390161, x2 = 1.114157 and f(x2) = 0.000000
Ln 4, Col 18 Spaces: 4 UTF-8 CRLF Python
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 1: Python
Primer intervalo -1
Segundo Intervalo 2
Error torelable: 0.000000001
Iteracion0-1, x2 = -0.513279 and f(x2) = -0.747962
Iteracion0-2, x2 = 0.686701 and f(x2) = -0.564639
Iteracion0-3, x2 = 1.222792 and f(x2) = 0.149492
Iteracion0-4, x2 = 1.110570 and f(x2) = -0.004983
Iteracion0-5, x2 = 1.114190 and f(x2) = 0.000045
Iteracion0-6, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-7, x2 = 1.114157 and f(x2) = 0.000000
Raiz requerida es: 1.11415714
Ln 4, Col 31 Spaces: 4 UTF-8 CRLF Python
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 1: Python
Iteracion0-394525, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-394526, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-394527, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-394528, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-394529, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-394530, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-394531, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-394532, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-394533, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-394534, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-394535, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-394536, x2 = 1.114157 and f(x2) = 0.000000
Ln 6, Col 23 Spaces: 4 UTF-8 CRLF Python
```



```
Iteracion-81350, x2 = 0.67078813675695858620429135044105 and f(x2) =  
0.000000070009416375249600150709739  
Iteracion-81351, x2 = 0.67078811149124417667621855798643 and f(x2) =  
0.000000070008128849607942356669810  
Iteracion-81352, x2 = 0.67078808622599450650625385605963 and f(x2) =  
0.000000070006841323966284562629880  
Iteracion-81353, x2 = 0.67078806096121001978360709472327 and f(x2) =  
0.000000070005554020369231693621259  
Iteracion-81354, x2 = 0.67078803569689049446367334894603 and f(x2) =  
0.000000070004266605749876362096984  
Iteracion-81355, x2 = 0.67078801043303593054645261872793 and f(x2) =  
0.000000070002979080108218568057055  
Iteracion-81356, x2 = 0.67078798516964632803194490406895 and f(x2) =  
0.000000070001691887533468161564087  
Iteracion-81357, x2 = 0.67078795990672190896475513000041 and f(x2) =  
0.000000070000404472914112830039812  
Iteracion-81358, x2 = 0.67078793464426222925567344645970 and f(x2) =  
0.000000069999117391361664886062499  
  
Raiz requerida es: 0.67078793
```

$$F(X) = X^3 - 2X^2 + \left(\frac{4}{3}\right)^X - \frac{8}{27}$$