ANÁLISIS NUMÉRICO MÉTODO POSICIÓN FALSA

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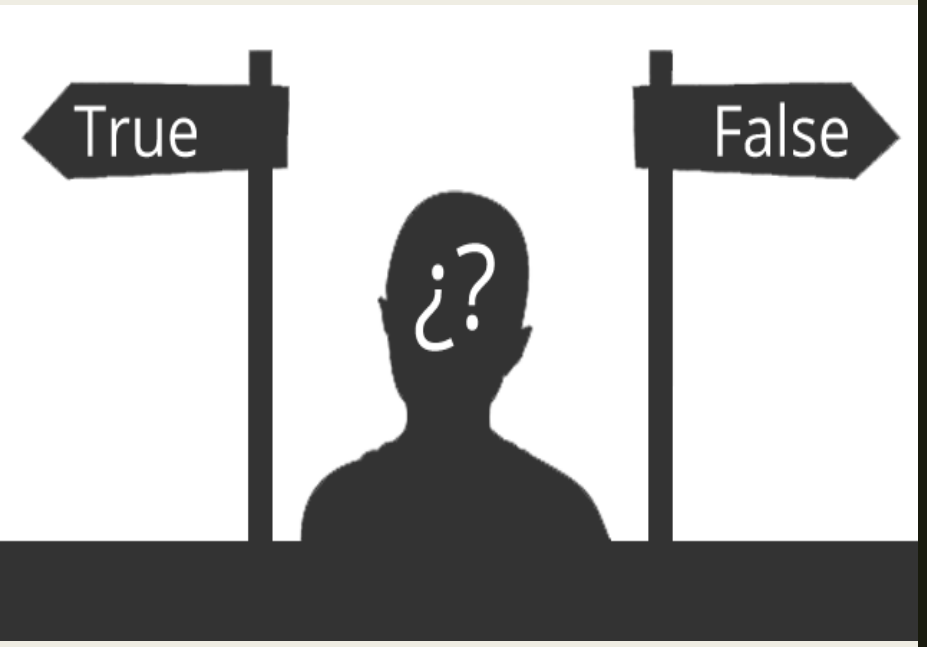
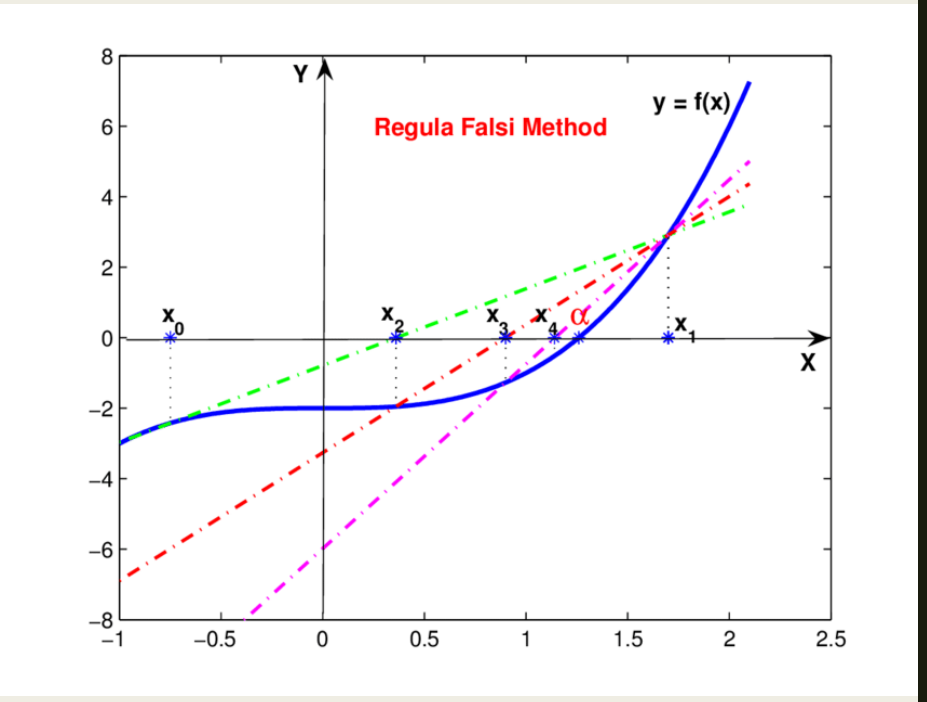
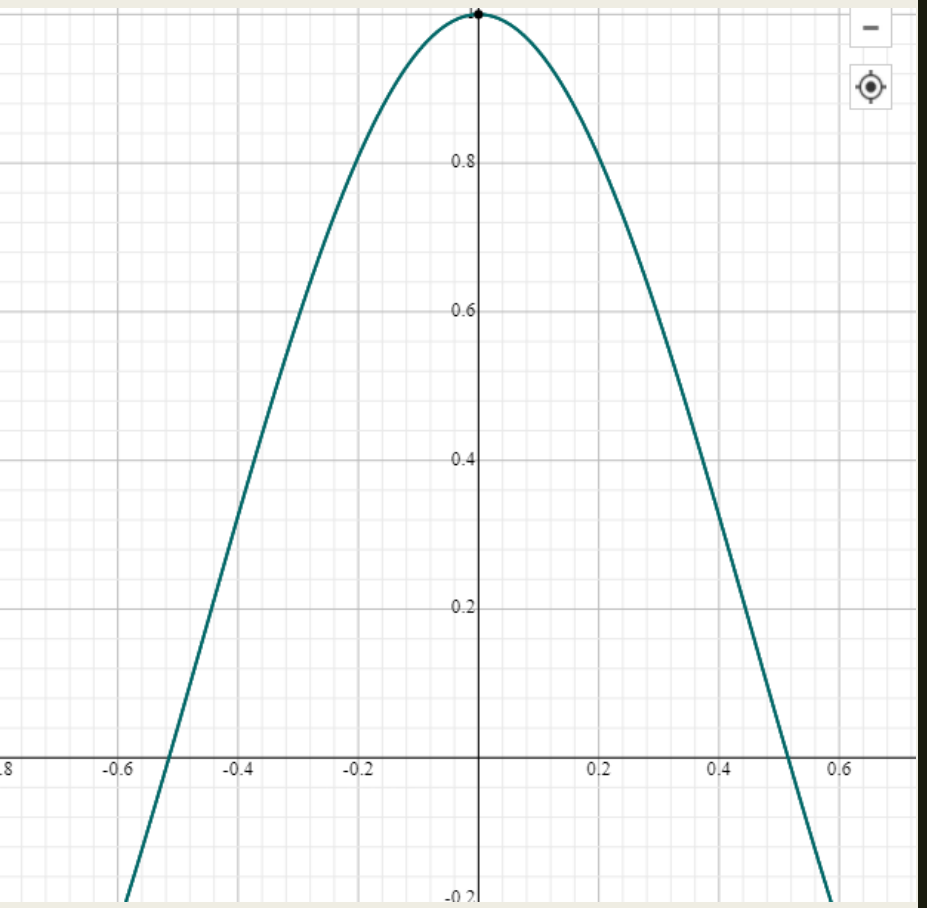




Condiciones

- 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
```

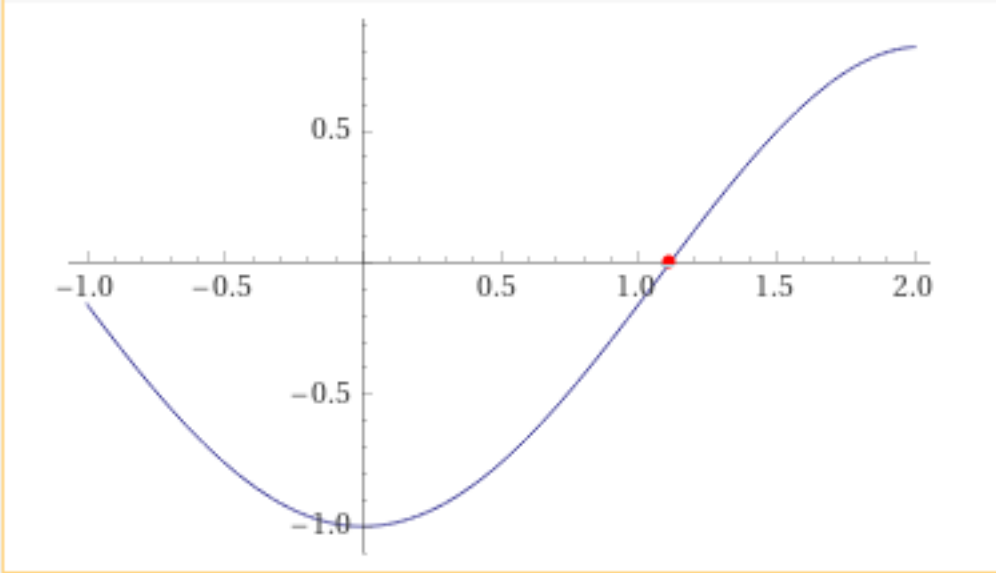
```
Primer intervalo 0
Segundo Intervalo 1
Error torelable: 0.00000000000000000000000000000001
Iteracion-1, x2 = 0.5473987634095686116708634472161 1 and f(x2) = -0.0896739317804611524298508129504 6
Iteracion-2, x2 = 0.5023509762366731301597155834315 3 and f(x2) = 0.0353038683859859259150937305094 0
Iteracion-3, x2 = 0.5150761254016748003081715978623 8 and f(x2) = -0.0003993538308484367860273778205 7
Iteracion-4, x2 = 0.5149337898713884920098848851921 5 and f(x2) = -0.0000014682418708611422175636107 6
Iteracion-5, x2 = 0.5149332665903325612077878759009 8 and f(x2) = -0.0000000053931492050018903228192 4
Iteracion-6, x2 = 0.5149332646682157621498276967031 4 and f(x2) = -0.0000000000198100980064452869555 7
Iteracion-7, x2 = 0.5149332646611554098470264761999 7 and f(x2) = -0.0000000000000727196081129477534 0
Iteracion-8, x2 = 0.5149332646611295416505527100525 8 and f(x2) = -0.0000000000000003885780586188047 9
Iteracion-9, x2 = 0.5149332646611294306282502475369 3 and f(x2) = 0.0000000000000000000000000000000 0

Raiz requerida es: 0.514933264661129430628250247536 93
```

Comprobación

```
y = lambda x : math.cos(2*x)**2 - x**2
print('%0.38f' % y(0.514933266590332561207787875900976))
```

```
-0.00000000539314920500189032281923573464
```

f(x)=xsin(x)-1 en [-1,2]



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

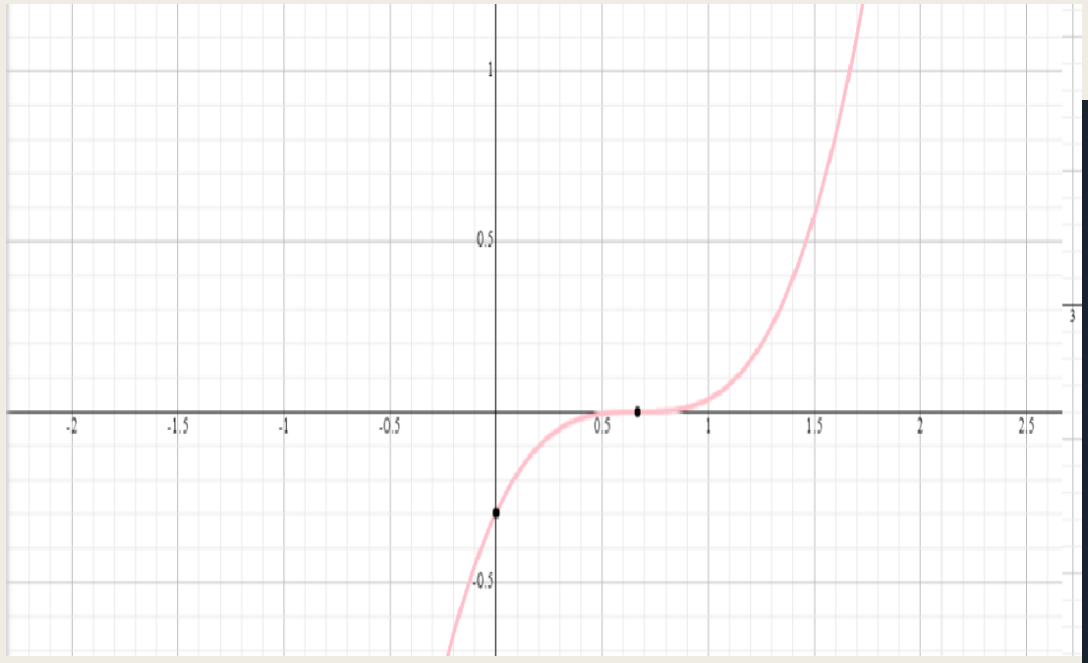
```
Iteracion0-1390150, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390151, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390152, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390153, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390154, x2 = 1.114157 and f(x2) = 0.000000
Iteracion0-1390155, x2 = 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

```
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) =
0.00000007000941637524960015070973 9
Iteracion-81351, x2 = 0.67078811149124417667621855798643 and f(x2) =
0.00000007000812884960794235666981 0
Iteracion-81352, x2 = 0.67078808622599450650625385605963 and f(x2) =
0.00000007000684132396628456262988 0
Iteracion-81353, x2 = 0.67078806096121001978360709472327 and f(x2) =
0.00000007000555402036923169362125 9
Iteracion-81354, x2 = 0.67078803569689049446367334894603 and f(x2) =
0.00000007000426660574987636209698 4
Iteracion-81355, x2 = 0.67078801043303593054645261872793 and f(x2) =
0.00000007000297908010821856805705 5
Iteracion-81356, x2 = 0.67078798516964632803194490406895 and f(x2) =
0.00000007000169188753346816156408 7
Iteracion-81357, x2 = 0.67078795990672190896475513000041 and f(x2) =
0.00000007000040447291411283003981 2
Iteracion-81358, x2 = 0.67078793464426222925567344645970 and f(x2) =
0.00000006999911739136166488606249 9

Raiz requerida es: 0.67078793
```

F(X)=X^3 – 2X^2 + (4/3)^X - 8/27