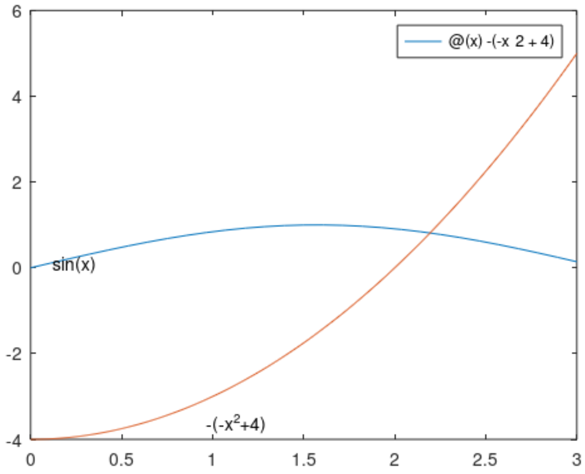
1) $sen(x) - x^2 + 4 = 0$



Resolução por bisseção

iter.	a	b	x	f(a)	f(x)	(b-a)/2 \n
1	1.0000	3.0000	2.0000	3.8	0.9	1.0000
2	2.0000	3.0000	2.5000	0.9	-1.7	0.5000
3	2.0000	2.5000	2.2500	0.9	-0.3	0.2500
4	2.0000	2.2500	2.1250	0.9	0.3	0.1250
5	2.1250	2.2500	2.1875	0.3	0.0	0.0625
6	2.1875	2.2500	2.2188	0.0	-0.1	0.0312
7	2.1875	2.2188	2.2031	0.0	-0.0	0.0156
8	2.1875	2.2031	2.1953	0.0	-0.0	0.0078
9	2.1875	2.1953	2.1914	0.0	0.0	0.0039
10	2.1914	2.1953	2.1934	0.0	0.0	0.0020
11	2.1934	2.1953	2.1943	0.0	-0.0	0.0010
12	2.1934	2.1943	2.1938	0.0	-0.0	0.0005
13	2.1934	2.1938	2.1936	0.0	0.0	0.0002
14	2.1936	2.1938	2.1937	0.0	-0.0	0.0001
15	2.1936	2.1937	2.1937	0.0	0.0	0.0001

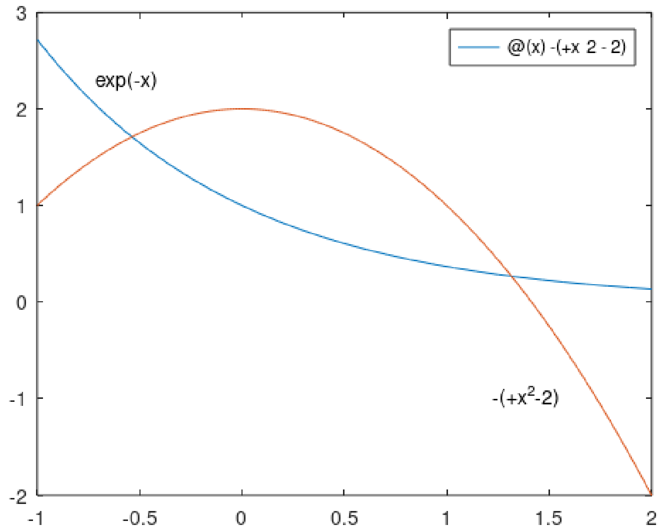
O metodo da bisseccao converge com |b-a| < tolerancia.
A raiz encontrada eh x(15)=2.193665

Resolução pelo método das cordas:

iter.	a	b	x	f(a)	f(x)	|x(i+1)-x(i)| \n
1	1.00000	3.00000	1.88306	3.8	1.4	1.88306
2	1.88306	3.00000	2.13369	1.4	0.3	0.25063
3	2.13369	3.00000	2.18297	0.3	0.1	0.04928
4	2.18297	3.00000	2.19179	0.1	0.0	0.00882
5	2.19179	3.00000	2.19334	0.0	0.0	0.00155
6	2.19334	3.00000	2.19362	0.0	0.0	0.00027
7	2.19362	3.00000	2.19366	0.0	0.0	0.00005

O metodo da cordas converge .
A raiz encontrada eh x(7)=2.193616

2) $e^{-x} + x^2 - 2 = 0$



iter.	a	b	x	f(a)	f(x)	(b-a)/2 \n
1	1.0000	2.0000	1.5000	-0.6	0.5	0.5000
2	1.0000	1.5000	1.2500	-0.6	-0.2	0.2500
3	1.2500	1.5000	1.3750	-0.2	0.1	0.1250
4	1.2500	1.3750	1.3125	-0.2	-0.0	0.0625
5	1.3125	1.3750	1.3438	-0.0	0.1	0.0312
6	1.3125	1.3438	1.3281	-0.0	0.0	0.0156
7	1.3125	1.3281	1.3203	-0.0	0.0	0.0078
8	1.3125	1.3203	1.3164	-0.0	0.0	0.0039
9	1.3125	1.3164	1.3145	-0.0	-0.0	0.0020
10	1.3145	1.3164	1.3154	-0.0	-0.0	0.0010
11	1.3154	1.3164	1.3159	-0.0	-0.0	0.0005
12	1.3159	1.3164	1.3162	-0.0	0.0	0.0002
13	1.3159	1.3162	1.3160	-0.0	0.0	0.0001
14	1.3159	1.3160	1.3160	-0.0	0.0	0.0001

O metodo da bisseccao converge com |b-a| < tolerancia.
A raiz encontrada eh x(14)=1.315979

Pelo método das cordas

iter.	a	b	x	f(a)	f(x)	|x(i+1)-x(i)| \n
1	1.00000	2.00000	1.22841	-0.6	-0.2	1.22841
2	1.22841	2.00000	1.29396	-0.2	-0.1	0.06555
3	1.29396	2.00000	1.31058	-0.1	-0.0	0.01662
4	1.31058	2.00000	1.31466	-0.0	-0.0	0.00408
5	1.31466	2.00000	1.31566	-0.0	-0.0	0.00099
6	1.31566	2.00000	1.31590	-0.0	-0.0	0.00024
7	1.31590	2.00000	1.31595	-0.0	-0.0	0.00006

O metodo da cordas converge .
A raiz encontrada eh x(7)=1.315896

3) $\ln(x) - x^2 + 4 = 0$

Usando o método de Newton

```
iter   x(i)   Erro Absoluto
 1      1.00000
 2      4.00000      3.00000
 3      2.63049      1.36951
 4      2.23049      0.40000
 5      2.18741      0.04308
 6      2.18689      0.00052
 7      2.18689      0.00000
Raiz encontrada com a tolerancia desejada
xr = 2.18688103187334
```

Resolvendo por iteração linear, usando a g(x) como: $g(x) = \sqrt{\ln(x) + 4}$

```
iter   x(i)   Erro Absoluto
 1      1.00000
 2      2.00000      1.00000
 3      2.16637      0.16637
 4      2.18473      0.01836
 5      2.18666      0.00193
 6      2.18686      0.00020
 7      2.18689      0.00002
Raiz encontrada
xr = 2.1869
x =
```

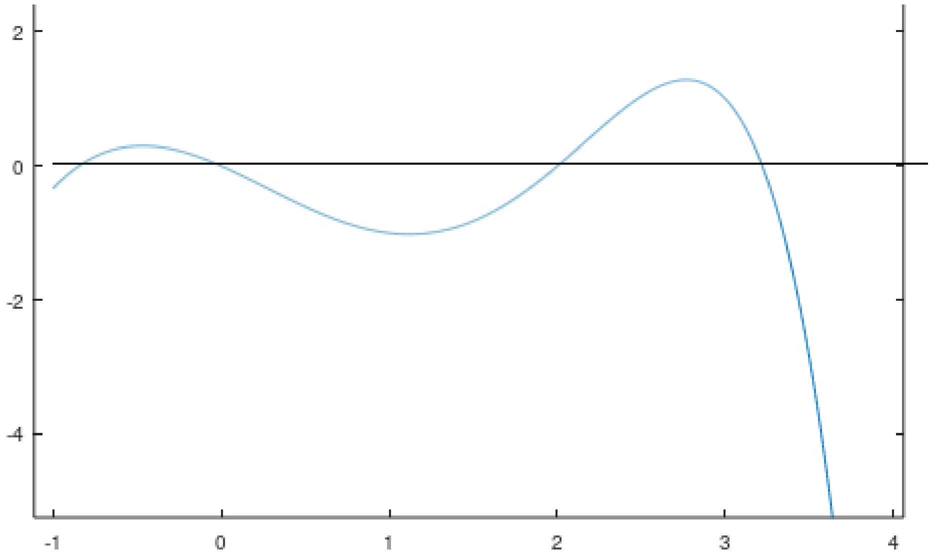
4)

```
iter   x(i)   Erro Absoluto
 1      1.00000
 2      0.56594      0.43406
 3      0.42595      0.14000
 4      0.40808      0.01787
 5      0.40778      0.00030
 6      0.40778      0.00000
Raiz encontrada com a tolerancia desejada
xr = 0.4078
x =
```

Resolvendo por iteração linear, tomando g(x)= $g(x)=\sqrt{\dfrac{e^{-x}}{4}}$

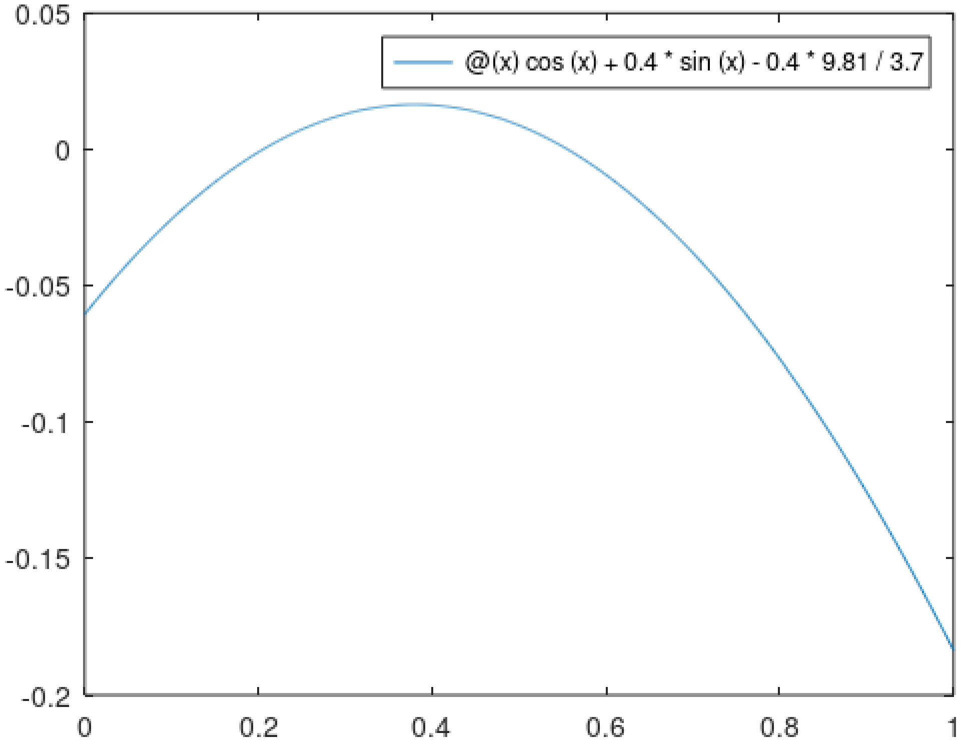
```
iter   x(i)   Erro Absoluto
 1      1.00000
 2      0.30327      0.69673
 3      0.42965      0.12639
 4      0.40334      0.02631
 5      0.40868      0.00534
 6      0.40759      0.00109
 7      0.40781      0.00022
 8      0.40777      0.00005
Raiz encontrada
xr = 0.4078
```

5)




```
Primeira raiz: x0=-1
iter   x(i)   Erro Absoluto
 1      1.00000
 2     -2.38024      3.38024
 3     -1.63785      0.74239
 4     -1.18539      0.45246
 5     -0.94602      0.23937
 6     -0.85877      0.08724
 7     -0.84610      0.01267
 8     -0.84584      0.00026
 9     -0.84584      0.00000
Raiz encontrada com a tolerancia desejada
xr = -0.8458
```

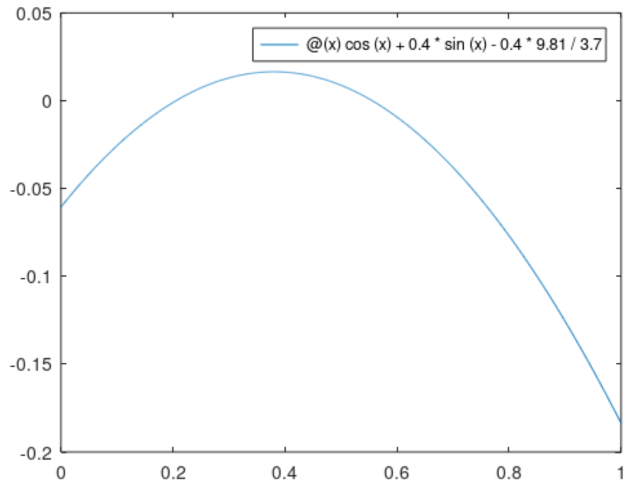
```
Segunda raiz: x0=0
x0 = 0
iter   x(i)   Erro Absoluto
 1      0.00000
 2      0.00000      0.00000
Raiz encontrada com a tolerancia desejada
xr = 0
```




```
Terceira raiz: x0=2
x0 = 2
iter   x(i)   Erro Absoluto
 1      2.00000
 2      2.00000      0.00000
Raiz encontrada com a tolerancia desejada
```

```
Quarta raiz: x0=3
iter   x(i)   Erro Absoluto
 1      3.00000
 2      3.37558      0.37558
 3      3.25069      0.12489
 4      3.22205      0.02864
 5      3.22065      0.00141
 6      3.22064      0.00000
Raiz encontrada com a tolerancia desejada
```

6) Aplicação (Bloco puxado por uma força)




```
angulo minimo: x0=0
x0 = 0
iter  x(i)  Erro Absoluto
 1      0.00000
 2      0.15135      0.15135
 3      0.19902      0.04767
 4      0.20517      0.00615
 5      0.20528      0.00011
 6      0.20528      0.00000
Raiz encontrada com a tolerancia desejada
xr = 0.2053
```

```
x0 = 1.5708
iter  x(i)  Erro Absoluto
 1      1.57080
 2      0.91026      0.66054
 3      0.66931      0.24094
 4      0.57766      0.09165
 5      0.55694      0.02072
 6      0.55574      0.00120
 7      0.55573      0.00000
Raiz encontrada com a tolerancia desejada
xr = 0.5557
```