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2022 - 05153

WORD PROBLEM

1)

#	a	b	f(a)	f(b)	c	f(c)	Update	Error(%)
24	14	12.18	93088	-4917e-06	12.18	-1.984e-06	b=c	7.892e-10

```
>
> FalsePositionMethod (f, a, b, macheps, max, verbose);
    a  b      f(a) f(b)      c       f(c)       Update  Error(%)
1   14 12     93088 -5198    12.11 -2214        "b = c" NA
2   14 12.11 93088 -2214     12.15 -913.8       "b = c" 0.3623
3   14 12.15 93088 -913.8    12.17 -372.2       "b = c" 0.1478
4   14 12.17 93088 -372.2    12.18 -150.7       "b = c" 0.05993
5   14 12.18 93088 -150.7    12.18 -60.93       "b = c" 0.02423
6   14 12.18 93088 -60.93    12.18 -24.6        "b = c" 0.009785
7   14 12.18 93088 -24.6     12.18 -9.931       "b = c" 0.00395
8   14 12.18 93088 -9.931    12.18 -4.008       "b = c" 0.001594
9   14 12.18 93088 -4.008    12.18 -1.618       "b = c" 0.0006434
10  14 12.18 93088 -1.618    12.18 -0.6528      "b = c" 0.0002597
11  14 12.18 93088 -0.6528   12.18 -0.2635      "b = c" 0.0001048
12  14 12.18 93088 -0.2635   12.18 -0.1063      "b = c" 4.229e-05
13  14 12.18 93088 -0.1063   12.18 -0.04291     "b = c" 1.707e-05
14  14 12.18 93088 -0.04291  12.18 -0.01732     "b = c" 6.888e-06
15  14 12.18 93088 -0.01732  12.18 -0.006988    "b = c" 2.78e-06
16  14 12.18 93088 -0.006988 12.18 -0.00282     "b = c" 1.122e-06
17  14 12.18 93088 -0.00282  12.18 -0.001138    "b = c" 4.527e-07
18  14 12.18 93088 -0.001138 12.18 -0.0004593   "b = c" 1.827e-07
19  14 12.18 93088 -0.0004593 12.18 -0.0001854  "b = c" 7.373e-08
20  14 12.18 93088 -0.0001854 12.18 -7.48e-05   "b = c" 2.975e-08
21  14 12.18 93088 -7.48e-05  12.18 -3.019e-05  "b = c" 1.201e-08
22  14 12.18 93088 -3.019e-05 12.18 -1.218e-05  "b = c" 4.846e-09
23  14 12.18 93088 -1.218e-05 12.18 -4.917e-06  "b = c" 1.956e-09
24  14 12.18 93088 -4.917e-06 12.18 -1.984e-06  "b = c" 7.892e-10

$f
function(x) -26 + 85 * x - 91 * x ^ 2 - 44 * x ^ 3 - 8 * x ^ 4 + x ^ 5
<bytecode: 0x0000022e8634ad58>

$given_a
[1] 14

$given_b
[1] 12

$c
[1] 12.18

$iterations
[1] 24

$ea
[1] 7.892e-10

>
```

2)

#	x0	x1	f(x0)	f(x1)	x	f(x)	Error(%)
30	157.8	157.8	4.672e-05	5.778e-08	157.8	1.702e-12	1.223e-10

```
> SecantMethod (f, x0, x1, macheps, max, verbose);
    x0      x1       f(x0)      f(x1)      x         f(x)     Error(%)
1   1       3        -0.5747    -1.698     -0.02321  -0.4834  NA
2   3       -0.02321 -1.698     -0.4834    -1.226    -2.745   98.11
3   -0.02321 -1.226  -0.4834    -2.745     0.234     -0.2747  624.2
4   -1.226   0.234   -2.745     -0.2747    0.3964    -0.2119  40.98
5   0.234    0.3964  -0.2747    -0.2119    0.9447    -0.5058  58.04
6   0.3964   0.9447  -0.2119    -0.5058    0.000913  -0.4588  103376
7   0.9447   0.000913 -0.5058   -0.4588    -9.207    -1.809   100
8   0.000913 -9.207  -0.4588    -1.809     3.131     -1.183   394.1
9   -9.207   3.131   -1.809     -1.183     26.45     -1.019   88.17
10  3.131    26.45   -1.183     -1.019     171.7     -0.1245  84.59
11  26.45    171.7   -1.019     -0.1245    191.9     -1.891   10.53
12  171.7    191.9   -0.1245    -1.891     170.2     -0.4954  12.7
13  191.9    170.2   -1.891     -0.4954    162.6     -2.691   4.724
14  170.2    162.6   -0.4954    -2.691     172       -1.097   5.473
15  162.6    172     -2.691     -1.097     178.4     -0.9147  3.628
16  172      178.4   -1.097     -0.9147    210.9     -2.355   15.41
17  178.4    210.9   -0.9147    -2.355     157.8     0.06071  33.67
18  210.9    157.8   -2.355     0.06071    159.1     -1.069   0.8392
19  157.8    159.1   0.06071    -1.069     157.9     -0.04424 0.8005
20  159.1    157.9   -1.069     -0.04424   157.8     0.6246   0.03456
21  157.9    157.8   -0.04424   0.6246     157.9     -1.07    0.03226
22  157.8    157.9   0.6246     -1.07      157.8     0.6841   0.02038
23  157.9    157.8   -1.07      0.6841     157.8     -1.024   0.007947
24  157.8    157.8   0.6841     -1.024     157.8     -0.2769  0.004765
25  157.8    157.8   -1.024     -0.2769    157.8     0.4789   0.001766
26  157.8    157.8   -0.2769    0.4789     157.8     0.03721  0.001119
27  157.8    157.8   0.4789     0.03721    157.8     -0.007066 9.427e-05
28  157.8    157.8   0.03721    -0.007066  157.8     4.762e-05 1.504e-05
29  157.8    157.8   -0.007066  4.762e-05  157.8     5.778e-08 1.007e-07
30  157.8    157.8   4.762e-05  5.778e-08  157.8     1.702e-12 1.223e-10

$f
function(x) sin(x) + cos (1 + x ^ 2) - 1
<bytecode: 0x0000022e833593b8>

$given_x0
[1] 1

$given_x1
[1] 3

$x
[1] 157.8

$iterations
[1] 30

$ea
[1] 1.223e-10
```