

By Arinal

Contoh :

Persamaan Bessel Sferis

$$\frac{d^2y}{dx^2} + \frac{2}{x} \frac{dy}{dx} + y = 0$$

$$\frac{d^2y}{dx^2} = -\frac{2}{x} \frac{dy}{dx} - y$$

$$f(x) = -\frac{2}{x}u - y$$

Dimana

$$f(x) = \frac{d^2y}{dx^2}, \quad u = \frac{dy}{dx}$$

Output programnya adalah

```
C:\Users\ [redacted] \Documents\Fortran\PDE\New folder>a
masukan nilai h
0.2      <-- besar iterasi
masukan nilai n
50       <-- banyak iterasi
```

Interval = n/h

Output.txt

0.200000003	0.988518536
0.400000006	0.957963943
0.600000024	0.914312661
0.800000012	0.859117866
1.000000000	0.793813586
1.200000005	0.719973207
1.399999998	0.639326453
1.600000002	0.553729475
1.800000007	0.465120584
2.000000000	0.375469863
2.200000005	0.286726892
2.400000010	0.200768709
2.600000014	0.119350180
2.799999995	4.40584198E-02
3.000000000	-2.37274468E-02
3.200000005	-8.28699321E-02
3.400000010	-0.132499143
3.600000014	-0.172030449
3.799999995	-0.201173395
4.000000000	-0.219931632
4.200000029	-0.228594080
4.400000010	-0.227717698
4.599999990	-0.218102500

4.80000019	-0.200759709
5.00000000	-0.176874340
5.20000029	-0.147763252
5.40000010	-0.114830256
5.59999990	-7.95197338E-02
5.80000019	-4.32701968E-02
6.00000000	-7.46943802E-03
6.20000029	2.65874900E-02
6.40000010	5.77360094E-02
6.59999990	8.49744529E-02
6.80000019	0.107490182
7.00000000	0.124678716
7.20000029	0.136155367
7.40000010	0.141759247
7.59999990	0.141549617
7.80000019	0.135794908
8.00000000	0.124955073
8.19999981	0.109657854
8.40000057	9.06701013E-02
8.60000038	6.88651353E-02
8.80000019	4.51874658E-02
9.00000000	2.06160750E-02
9.19999981	-3.87233868E-03
9.40000057	-2.73389407E-02
9.60000038	-4.89158854E-02
9.80000019	-6.78359270E-02
10.00000000	-8.34575221E-02

Bentuk Grafik

