

GNU Octave, version 3.8.2

Copyright (C) 2014 John W. Eaton and others.

This is free software; see the source code for copying conditions.

There is ABSOLUTELY NO WARRANTY; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. For details, type 'warranty'.

Octave was configured for "i586-pc-linux-gnu".

Additional information about Octave is available at <http://www.octave.org>.

Please contribute if you find this software useful.

For more information, visit <http://www.octave.org/get-involved.html>

Read <http://www.octave.org/bugs.html> to learn how to submit bug reports.

For information about changes from previous versions, type 'news'.

a = 1.000000

l = 1.000000

T = 0.200000

$\varepsilon =$

1.0000e-10

Параметры сетки:

n = 32

k = 16

hx = 0.031250

ht = 0.012500

Шаги дифференцирования/интегрирования:

$\eta = 1.000000\text{e-}03$

$\xi = 1.000000\text{e-}04$

Начальное возмущение =

$0.1 * \sin(2 * \pi * x)$

Using Marquardt minimization

Iteration 0/Inf error:

7.4720

Iteration 0/Inf gradient:

0

0

0

0
0
0
0
0
0
0
0
0
0
0
0
0
0

Iteration 0/Inf gradient norm:
0

Всего демпферов: 1

Демпфер # 1

$$x_1 = 0.500000$$

Верхнее предельное значение $w_1(t) = \text{NaN}$

Нижнее предельное значение $w_1(t) = \text{NaN}$

Управляющая функция $w_1(t)$:

[illegible]

E(T) =
7.4720

u(x, t)

T = 0.000000: 0.000000 0.019509 0.038268 0.055557 0.070711 0.083147 0.092388 0.098079
0.100000 0.098079 0.092388 0.083147 0.070711 0.055557 0.038268 0.019509 0.000000 -0.019509
-0.038268 -0.055557 -0.070711 -0.083147 -0.092388 -0.098079 -0.100000 -0.098079 -0.092388
-0.083147 -0.070711 -0.055557 -0.038268 -0.019509 -0.000000
T = 0.012500: 0.000000 0.017283 0.033903 0.049219 0.062644 0.073662 0.081848 0.086890
0.088592 0.086890 0.081848 0.073662 0.062644 0.049219 0.033903 0.017283 0.000000 -0.017283
-0.033903 -0.049219 -0.062644 -0.073662 -0.081848 -0.086890 -0.088592 -0.086890 -0.081848
-0.073662 -0.062644 -0.049219 -0.033903 -0.017283 0.000000
T = 0.025000: 0.000000 0.011114 0.021802 0.031651 0.040284 0.047369 0.052634 0.055876
0.056971 0.055876 0.052634 0.047369 0.040284 0.031651 0.021802 0.011114 -0.000000 -0.011114
-0.021802 -0.031651 -0.040284 -0.047369 -0.052634 -0.055876 -0.056971 -0.055876 -0.052634
-0.047369 -0.040284 -0.031651 -0.021802 -0.011114 0.000000
T = 0.037500: 0.000000 0.002410 0.004727 0.006862 0.008733 0.010269 0.011411 0.012114
0.012351 0.012114 0.011411 0.010269 0.008733 0.006862 0.004727 0.002410 -0.000000 -0.002410
-0.004727 -0.006862 -0.008733 -0.010269 -0.011411 -0.012114 -0.012351 -0.012114 -0.011411
-0.010269 -0.008733 -0.006862 -0.004727 -0.002410 0.000000
T = 0.050000: 0.000000 -0.006845 -0.013427 -0.019493 -0.024810 -0.029174 -0.032416 -0.034413
-0.035087 -0.034413 -0.032416 -0.029174 -0.024810 -0.019493 -0.013427 -0.006845 -0.000000
0.006845 0.013427 0.019493 0.024810 0.029174 0.032416 0.034413 0.035087 0.034413 0.032416
0.029174 0.024810 0.019493 0.013427 0.006845 0.000000
T = 0.062500: 0.000000 -0.014538 -0.028517 -0.041401 -0.052693 -0.061960 -0.068847 -0.073087
-0.074519 -0.073087 -0.068847 -0.061960 -0.052693 -0.041401 -0.028517 -0.014538 -0.000000
0.014538 0.028517 0.041401 0.052693 0.061960 0.068847 0.073087 0.074519 0.073087 0.068847
0.061960 0.052693 0.041401 0.028517 0.014538 0.000000
T = 0.075000: 0.000000 -0.018914 -0.037101 -0.053862 -0.068553 -0.080610 -0.089569 -0.095086
-0.096949 -0.095086 -0.089569 -0.080610 -0.068553 -0.053862 -0.037101 -0.018914 -0.000000
0.018914 0.037101 0.053862 0.068553 0.080610 0.089569 0.095086 0.096949 0.095086 0.089569
0.080610 0.068553 0.053862 0.037101 0.018914 0.000000
T = 0.087500: 0.000000 -0.018974 -0.037219 -0.054034 -0.068773 -0.080868 -0.089856 -0.095390
-0.097259 -0.095390 -0.089856 -0.080868 -0.068773 -0.054034 -0.037219 -0.018974 -0.000000
0.018974 0.037219 0.054034 0.068773 0.080868 0.089856 0.095390 0.097259 0.095390 0.089856
0.080868 0.068773 0.054034 0.037219 0.018974 0.000000
T = 0.100000: 0.000000 -0.014706 -0.028846 -0.041878 -0.053301 -0.062675 -0.069640 -0.073930
-0.075378 -0.073930 -0.069640 -0.062675 -0.053301 -0.041878 -0.028846 -0.014706 -0.000000
0.014706 0.028846 0.041878 0.053301 0.062675 0.069640 0.073930 0.075378 0.073930 0.069640
0.062675 0.053301 0.041878 0.028846 0.014706 0.000000
T = 0.112500: 0.000000 -0.007082 -0.013891 -0.020167 -0.025667 -0.030182 -0.033536 -0.035602
-0.036299 -0.035602 -0.033536 -0.030182 -0.025667 -0.020167 -0.013891 -0.007082 -0.000000
0.007082 0.013891 0.020167 0.025667 0.030182 0.033536 0.035602 0.036299 0.035602 0.033536
0.030182 0.025667 0.020167 0.013891 0.007082 0.000000
T = 0.125000: 0.000000 0.002158 0.004233 0.006146 0.007822 0.009198 0.010220 0.010849
0.011062 0.010849 0.010220 0.009198 0.007822 0.006146 0.004233 0.002158 0.000000 -0.002158
-0.004233 -0.006146 -0.007822 -0.009198 -0.010220 -0.010849 -0.011062 -0.010849 -0.010220
-0.009198 -0.007822 -0.006146 -0.004233 -0.002158 0.000000
T = 0.137500: 0.000000 0.010905 0.021392 0.031056 0.039527 0.046479 0.051644 0.054825

0.055899 0.054825 0.051644 0.046479 0.039527 0.031056 0.021392 0.010905 0.000000 -0.010905
-0.021392 -0.031056 -0.039527 -0.046479 -0.051644 -0.054825 -0.055899 -0.054825 -0.051644
-0.046479 -0.039527 -0.031056 -0.021392 -0.010905 0.000000
T = 0.150000: 0.000000 0.017165 0.033669 0.048880 0.062213 0.073155 0.081285 0.086292
0.087982 0.086292 0.081285 0.073155 0.062213 0.048880 0.033669 0.017165 0.000000 -0.017165
-0.033669 -0.048880 -0.062213 -0.073155 -0.081285 -0.086292 -0.087982 -0.086292 -0.081285
-0.073155 -0.062213 -0.048880 -0.033669 -0.017165 0.000000
T = 0.162500: 0.000000 0.019507 0.038265 0.055552 0.070705 0.083140 0.092380 0.098070
0.099992 0.098070 0.092380 0.083140 0.070705 0.055552 0.038265 0.019507 0.000000 -0.019507
-0.038265 -0.055552 -0.070705 -0.083140 -0.092380 -0.098070 -0.099992 -0.098070 -0.092380
-0.083140 -0.070705 -0.055552 -0.038265 -0.019507 0.000000
T = 0.175000: 0.000000 0.017399 0.034130 0.049549 0.063064 0.074156 0.082398 0.087473
0.089186 0.087473 0.082398 0.074156 0.063064 0.049549 0.034130 0.017399 0.000000 -0.017399
-0.034130 -0.049549 -0.063064 -0.074156 -0.082398 -0.087473 -0.089186 -0.087473 -0.082398
-0.074156 -0.063064 -0.049549 -0.034130 -0.017399 0.000000
T = 0.187500: 0.000000 0.011322 0.022208 0.032241 0.041035 0.048252 0.053615 0.056917
0.058033 0.056917 0.053615 0.048252 0.041035 0.032241 0.022208 0.011322 0.000000 -0.011322
-0.022208 -0.032241 -0.041035 -0.048252 -0.053615 -0.056917 -0.058033 -0.056917 -0.053615
-0.048252 -0.041035 -0.032241 -0.022208 -0.011322 0.000000
T = 0.200000: 0.000000 0.002661 0.005219 0.007577 0.009643 0.011339 0.012600 0.013376
0.013638 0.013376 0.012600 0.011339 0.009643 0.007577 0.005219 0.002661 0.000000 -0.002661
-0.005219 -0.007577 -0.009643 -0.011339 -0.012600 -0.013376 -0.013638 -0.013376 -0.012600
-0.011339 -0.009643 -0.007577 -0.005219 -0.002661 0.000000