

Showing Euler results for $u(x)$ for $(x = 10)$

$u(0) = 1$

$v(0) = 1$

n	$A(h_i)$	$A(h_{(i-1)}) - A(h_i)$
5	3.9994e+08	
10	1.65507e+104	-1.65507e+104
20	-0.000147134	1.65507e+104
40	3.70687e-11	-0.000147134
80	1.02637e-07	-1.026e-07
160	9.40345e-07	-8.37708e-07
320	2.27569e-06	-1.33534e-06

Needs more iterations to converge

Showing Euler results for $v(x)$ for $(x = 10)$

$u(0) = 1$

$v(0) = 1$

n	$A(h_i)$	$A(h_{(i-1)}) - A(h_i)$
5	-1.31342e+08	
10	-1.65507e+104	1.65507e+104
20	-3.26247	-1.65507e+104
40	-2.02006	-1.24242
80	-1.66717	-0.352885
160	-1.5302	-0.136966
320	-1.46981	-0.0603903

Needs more iterations to converge

Generate Midpoint solutions at $t = 10$:

Showing results for $v(x)$ and $u(x)$ 1

n	$A(h_i)$	$A(h_{(i-1)})$	$-A(h_i)$
5	3.36317e+131		
10	-0.00617715	3.36317e+131	
20	1.19685e-05	-0.00618912	-5.4
40	5.99556e-06	5.97294e-06	
80	5.21087e-06	7.8469e-07	
160	5.00133e-06	2.09538e-07	
320	4.94528e-06	5.60494e-08	
640	4.9307e-06	1.45833e-08	

Showing results for $v(x)$ and $u(x)$ 2

n	$A(h_i)$	$A(h_{(i-1)})$	$-A(h_i)$
5	-2.68189e+131		
10	-1.68097	-2.68189e+131	
20	-1.50621	-0.174758	1.5
40	-1.41951	-0.0867014	
80	-1.41348	-0.00603049	
160	-1.41378	0.0002941	
320	-1.41407	0.000296484	
640	-1.41417	0.000101868	

Showing RK4 results for $u(x)$ for $(x = 10)$

$u(0) = 1$

$v(0) = 1$

n	$A(h_i)$	$A(h_{(i-1)}) - A(h_i)$
5	nan	
10	1.55633e-05	
20	5.25476e-06	1.03086e-05
40	4.93971e-06	3.15046e-07
80	4.92636e-06	1.33481e-08
160	4.92575e-06	6.15191e-10
320	4.92572e-06	3.13958e-11

Showing RK4 results for $v(x)$ for $(x = 10)$

$u(0) = 1$

$v(0) = 1$

n	$A(h_i)$	$A(h_{(i-1)}) - A(h_i)$
5	nan	
10	-1.4056	
20	-1.41202	0.00641511
40	-1.41415	0.00213369
80	-1.41421	6.04743e-05
160	-1.41421	3.59842e-07
320	-1.41421	-9.30521e-08

Generate Trapezoidal solutions at $t = 10$:

Showing results for $v(x)$ and $u(x)$ 1

n	$A(h_i)$	$A(h_{(i-1)}) - A(h_i)$
5	-4.2434e-11	
10	4.0558e-09	-4.09823e-09
20	1.07694e-06	-1.07288e-06
40	2.88649e-06	-1.80955e-06
80	3.95162e-06	-1.06513e-06
160	4.45424e-06	-5.02624e-07
320	4.70012e-06	-2.45871e-07
640	4.81486e-06	-1.14743e-07

Showing results for $v(x)$ and $u(x)$ 2

n	$A(h_i)$	$A(h_{(i-1)}) - A(h_i)$
5	-2	
10	-1.58114	-0.418861
20	-1.45774	-0.123401
40	-1.42522	-0.0325187
80	-1.41697	-0.00824628
160	-1.4149	-0.0020691
320	-1.41439	-0.00051771
640	-1.41426	-0.000129495