

```

> restart;
> with(plots) :
> with(CurveFitting) :
> A := Interactive([0, 3.016315859, 5.753536424, 8.489713643, 11.22797756, 13.96519812,
16.09414745, 18.83136802, 21.26445296, 24.00167353, 26.73889409, 29.47611466,
31.60506399, 34.34228455, 37.07950512, 39.51259007, 41.6415394, 44.37875996,
46.81184491, 49.54906547, 51.6780148, 54.11109975, 56.84832032, 58.97726964,
62.32276145, 64.45171078, 66.88479572, 69.01374505, 71.44578665, 74.1814422,
76.91814109, 79.0455254, 81.47704533, 84.21165752, 86.33695514, 88.76691004,
90.89116431, 93.3195542, 96.04894966, 98.17059556, 100.5958554, 103.3231642,
105.4432451, 107.8679832, 110.5947703, 113.3236441, 116.0514746, 118.1746855,
120.9066893, 125.4640285, 127.8960701, 130.634334, 132.763805, 135.1994984,
137.9382839, 140.06932, 142.5034483, 145.2411905, 147.976846, 150.7119799,
153.4450271, 156.1770309, 158.9069481, 161.9399575, 164.6693529, 167.0951345,
169.2178237, 171.9472192, 174.3756091, 176.4998633, 179.2334322, 181.9680444,
184.4011293, 186.531122, 189.2719943, 192.0149532, 194.4542983, 197.2014306,
201.7822452, 203.921628, 207.5889923, 210.3397763, 213.699875, 217.3651526,
220.1133283, 222.859939, 224.9961918, 227.7412375, 230.1795391, 232.3131835,
234.7504419, 237.4913141, 240.5368437, 242.9720153, 245.7108009, 247.8313153,
247.8413153, 247.8513153, 250], [-0.041150436, -0.041150436, -0.04113729,
-0.038722776, -0.041110998, -0.041097851, -0.041087627, -0.04107448, -0.041062795,
-0.041049649, -0.041036503, -0.041023356, -0.041013132, -0.040999985, -0.040986839,
-0.040975154, -0.040964929, -0.040951783, -0.040940097, -0.040926951, -0.040916726,
-0.040905041, -0.040891895, -0.04088167, -0.040865602, -0.040855378, -0.040843692,
-0.040833467, -0.038420415, -0.034805218, -0.033591388, -0.029979112, -0.026365376,
-0.020348812, -0.011933802, -0.004718015, 0.006098363, 0.0169162, 0.034939601,
0.051759396, 0.069781335, 0.09260747, 0.113029316, 0.132251939, 0.156278757,
0.175502841, 0.197128292, 0.210346036, 0.222366019, 0.233194081, 0.235607134,
0.233218913, 0.232028454, 0.226036722, 0.222447817, 0.217655307, 0.215265626,
0.214078088, 0.217693285, 0.222509166, 0.232127781, 0.244147763, 0.26097048,
0.280196024, 0.298219424, 0.31504068, 0.329459108, 0.347482508, 0.358300346,
0.369116723, 0.377534655, 0.383551219, 0.383562904, 0.381171762, 0.372780123,
0.35958575, 0.345189232, 0.32238939, 0.27918669, 0.255183243, 0.214377529,
0.183172901, 0.149569828, 0.113566848, 0.088365639, 0.06676648, 0.049967135,
0.031970027, 0.019974876, 0.009178949, -0.000414835, -0.008806474, -0.018397336,
-0.023188385, -0.026777289, -0.030369115, -0.030369115, -0.030369115, -0.030369115],
x ) :
> X := A :
> PDE :=  $\frac{\partial}{\partial t} C(x, t) = 1 \cdot \left( \frac{\partial^2}{\partial x^2} C(x, t) \right) - 1 \cdot \left( \frac{\partial}{\partial x} C(x, t) \right) + 5 \cdot \left( \frac{\partial^4}{\partial x^4} C(x, t) \right) :$ 

```

>  $IBC := C(x, 0) = \mathcal{X}, D_1(C)(0, t) = 0, D_1C(250, t) = 0, D_2(C)(0, t) = 0, D_2(C)(250, t) = 0 :$

>  $pds := pdsolve(PDE, IBC, numeric, time = t, rang = 0 .. 250, timestep = -0.005, spacestep = 1,$   
 $method = CrankNicholson_{CenteredTimeCenteredSpace})$

Error, (in pdsolve) invalid input: `pdsolve/numeric` expects its 2nd argument, IBCs, to be of type {list, set}, but received C(x, 0) = piecewise(x < 1.50815793, -0.41150436e-1+0.170531972943138e-4\*x^2, x < 4.384926142, -0.40840130518582e-1-0.10287565889099e-3\*x-0.511595918829415e-4\*(x-3.016315859)^2, x < 7.121625035, -0.44634910122895e-1+0.607907878762211e-3\*x+0.310833052889983e-3\*(x-5.753536424)^2, x < 9.8588456, -0.387656517868932e-1+0.505032191852367e-5\*x-0.531161455837514e-3\*(x-8.489713643)^2, x < 12.59658784, -0.344315147287835e-1-0.594896385882743e-3\*x+0.312063981676383e-3\*(x-11.22797756)^2, x < 15.02967278, -0.424318828871334e-1+0.955....