Aplikační příklad 1.5

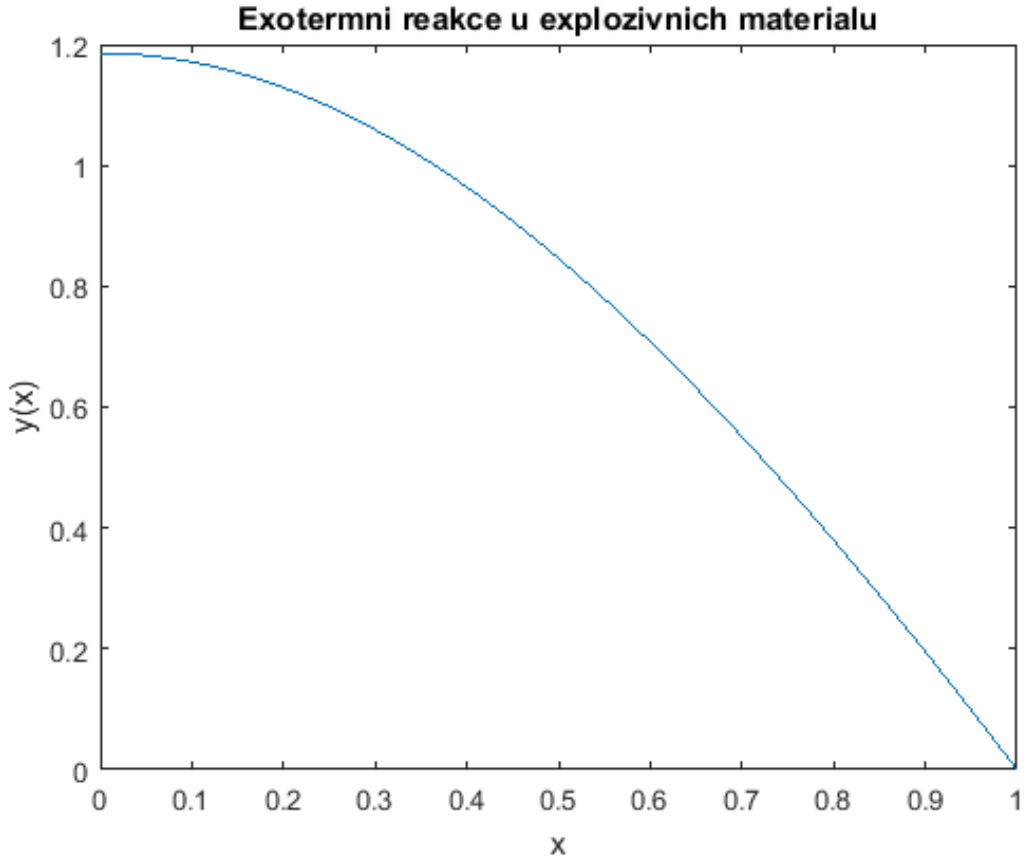
```
% theta''= -delta * exp(theta) ,
% theta'(0)=0, theta(1)=0
% delta = 0.87845 (pro vetsi delta reseni neexistuje)
n = 120;
f = inline('-0.87845 * exp(y)','x','y','dy');
df2 = inline('-0.87845 * exp(y)','x','y','dy');
df3 = inline('0','x','y','dy');
a = 0; b = 1;
alpha1 = 0;
alpha2 = 1;
beta1 = 1;
beta2 = 0;
gamma1 = 0;
gamma2 = 0;
y_init = [];
for i = 1:n+1;
    y_init(i) = 0.0;
end

N_eps = 1e-6;
N_maxiter = 100;
[x, y] = ODEsiteNewton(n, f, df2, df3, a, b, alpha1,alpha2, beta1,beta2, gamma1,gamma2, y_init,
N_eps, N_maxiter);
if (~isempty(y))
    figure
    plot (x,y)
    title('Exotermni reakce u explozivnich materialu')
    xlabel('x')
    ylabel('y(x)')
end
```

```
Iterace Newtonovy metody:
k = 1, error =   5.47599468e+00
k = 2, error =   2.04442193e+00
k = 3, error =   9.10433977e-01
k = 4, error =   4.31847169e-01
k = 5, error =   2.10492545e-01
k = 6, error =   1.03847061e-01
k = 7, error =   5.13943350e-02
k = 8, error =   2.52003982e-02
k = 9, error =   1.17902136e-02
k = 10, error =   4.61120415e-03
k = 11, error =   1.01789788e-03
k = 12, error =   5.49807830e-05
k = 13, error =   1.61361874e-07
Reseni:
   x      y(x)
0.000,   1.185610
0.008,   1.185510
0.017,   1.185210
0.025,   1.184711
0.033,   1.184013
```

0.042, 1.183115
0.050, 1.182018
0.058, 1.180722
0.067, 1.179228
0.075, 1.177535
0.083, 1.175644
0.092, 1.173555
0.100, 1.171269
0.108, 1.168787
0.117, 1.166108
0.125, 1.163233
0.133, 1.160163
0.142, 1.156898
0.150, 1.153440
0.158, 1.149788
0.167, 1.145943
0.175, 1.141907
0.183, 1.137679
0.192, 1.133261
0.200, 1.128654
0.208, 1.123858
0.217, 1.118874
0.225, 1.113704
0.233, 1.108348
0.242, 1.102807
0.250, 1.097082
0.258, 1.091175
0.267, 1.085086
0.275, 1.078816
0.283, 1.072367
0.292, 1.065739
0.300, 1.058935
0.308, 1.051955
0.317, 1.044800
0.325, 1.037471
0.333, 1.029971
0.342, 1.022299
0.350, 1.014458
0.358, 1.006449
0.367, 0.998273
0.375, 0.989931
0.383, 0.981425
0.392, 0.972756
0.400, 0.963926
0.408, 0.954936
0.417, 0.945788
0.425, 0.936482
0.433, 0.927021
0.442, 0.917406
0.450, 0.907638
0.458, 0.897719
0.467, 0.887650
0.475, 0.877433
0.483, 0.867069
0.492, 0.856560

0.500, 0.845907
0.508, 0.835112
0.517, 0.824177
0.525, 0.813103
0.533, 0.801890
0.542, 0.790542
0.550, 0.779060
0.558, 0.767444
0.567, 0.755697
0.575, 0.743821
0.583, 0.731815
0.592, 0.719683
0.600, 0.707426
0.608, 0.695045
0.617, 0.682542
0.625, 0.669918
0.633, 0.657175
0.642, 0.644314
0.650, 0.631337
0.658, 0.618245
0.667, 0.605040
0.675, 0.591723
0.683, 0.578296
0.692, 0.564761
0.700, 0.551118
0.708, 0.537369
0.717, 0.523515
0.725, 0.509559
0.733, 0.495501
0.742, 0.481343
0.750, 0.467087
0.758, 0.452733
0.767, 0.438283
0.775, 0.423739
0.783, 0.409101
0.792, 0.394371
0.800, 0.379551
0.808, 0.364642
0.817, 0.349645
0.825, 0.334562
0.833, 0.319393
0.842, 0.304140
0.850, 0.288805
0.858, 0.273388
0.867, 0.257891
0.875, 0.242315
0.883, 0.226661
0.892, 0.210931
0.900, 0.195126
0.908, 0.179246
0.917, 0.163293
0.925, 0.147269
0.933, 0.131173
0.942, 0.115009
0.950, 0.098776

```
0.958,   0.082475
0.967,   0.066108
0.975,   0.049676
0.983,   0.033180
0.992,   0.016621
1.000,   0.000000
```



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