Aplikační příklad 1.3

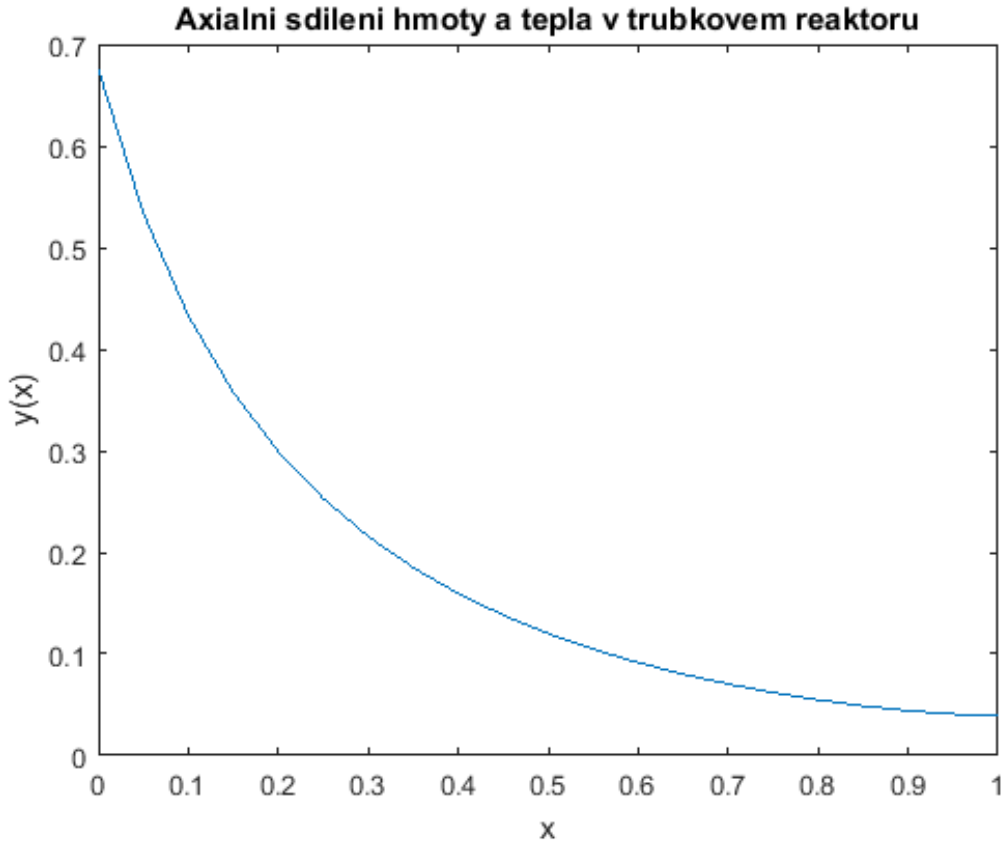
```
% 1/Pe * y'' - y' - p * y^m * T^(-m) * exp (k - R/T) = 0, T = 1 - H*(1-y)
% y(0) - 1/Pe * y'(0) = 1,
% y'(1) = 0

df3 = inline('10.0','x','y','dy');
n = 20;
a = 0; b = 1;
alpha1 = 1;
alpha2 = 0;
beta1 = -1.0/10.0;
beta2 = 1;
gamma1 = 1;
gamma2 = 0;
y_init = [];
for i = 1:n+1;
    y_init(i) = 1.0;
end

N_eps = 1e-6;
N_maxiter = 50;
[x, y] = ODEsiteNewton(n, @f_ap3, @df2_ap3, df3, a, b, alpha1,alpha2, beta1,beta2, gamma1,gamma2,
y_init, N_eps, N_maxiter);
if (~isempty(y))
    figure
    plot (x,y)
    title('Axialni sdileni hmoty a tepla v trubkovem reaktoru')
    xlabel('x')
    ylabel('y(x)')
end
```

```
Iterace Newtonovy metody:
k = 1, error =   1.84714471e+00
k = 2, error =   1.23581113e+00
k = 3, error =   6.21162840e-01
k = 4, error =   1.53710903e-01
k = 5, error =   7.94147271e-03
k = 6, error =   3.89855134e-05
k = 7, error =   4.71715218e-06
k = 8, error =   6.21516828e-07
Reseni:
   x      y(x)
0.000,   0.675558
0.050,   0.533770
0.100,   0.432849
0.150,   0.357465
0.200,   0.299194
0.250,   0.252993
0.300,   0.215642
0.350,   0.184984
0.400,   0.159510
0.450,   0.138135
0.500,   0.120053
0.550,   0.104655
```

```
0.600,   0.091474
0.650,   0.080147
0.700,   0.070393
0.750,   0.062003
0.800,   0.054838
0.850,   0.048844
0.900,   0.044092
0.950,   0.040857
1.000,   0.039778
```



Published with MATLAB® R2015a