Aplikační příklad 1.2

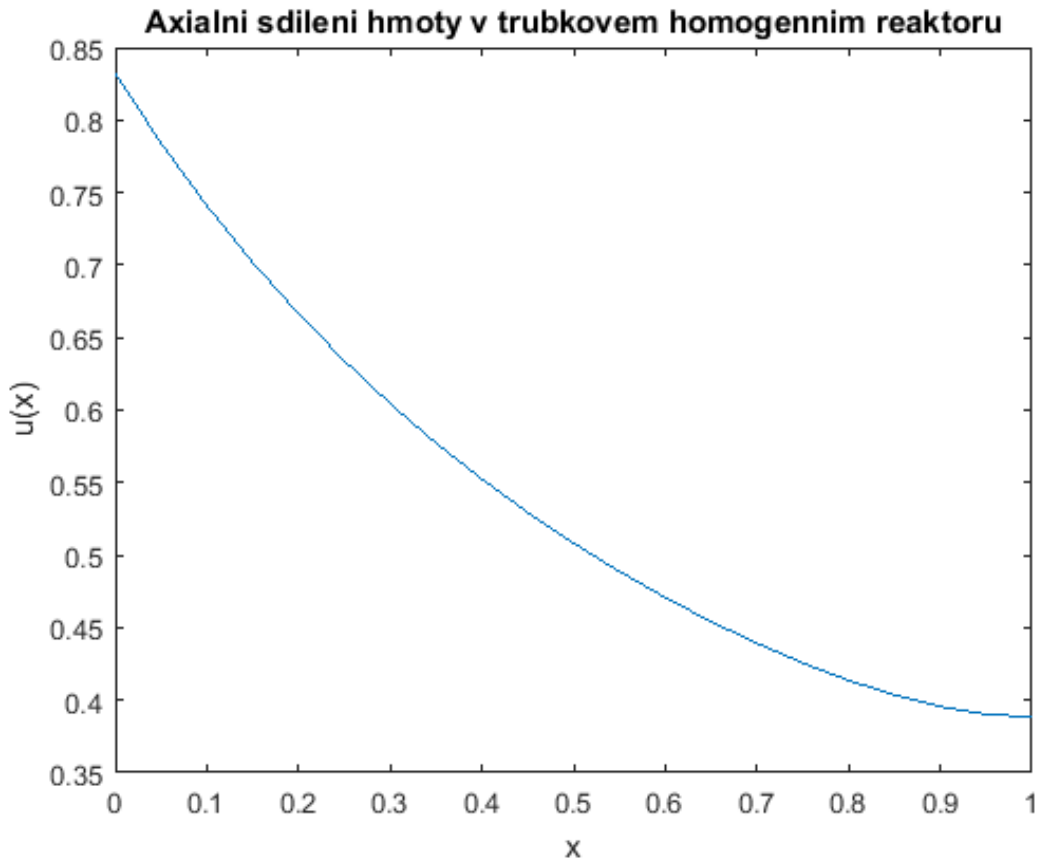
```
% 1/Pe * u'' - u' - R * u^2 = 0,
% u(0) - 1/Pe * u'(0) = 1,
% u'(1) = 0

% Pe = 6, R = 2
n = 20;
f = inline('6 * du + 2 * 6 * u^2','x','u','du');
df2 = inline('2 * 6 * 2 * u','x','u','du');
df3 = inline('6','x','u','du');
a = 0; b = 1;
alpha1 = 1;
alpha2 = 0;
beta1 = -1.0/6.0;
beta2 = 1;
gamma1 = 1;
gamma2 = 0;
u_init = [];
for i = 1:n+1;
    u_init(i) = 1.0;
end

N_eps = 1e-6;
N_maxiter = 50;
[x, u] = ODEsiteNewton(n, f, df2, df3, a, b, alpha1,alpha2, beta1,beta2, gamma1,gamma2, u_init,
N_eps, N_maxiter);
if (~isempty(u))
    figure
    plot (x,u)
    title('Axialni sdileni hmoty v trubkovem homogennim reaktoru')
    xlabel('x')
    ylabel('u(x)')
end
```

```
Iterace Newtonovy metody:
k = 1, error =   1.90622077e+00
k = 2, error =   3.51103548e-01
k = 3, error =   7.85696886e-02
k = 4, error =   2.46879639e-02
k = 5, error =   8.80020751e-03
k = 6, error =   3.06047819e-03
k = 7, error =   1.07271857e-03
k = 8, error =   3.74948412e-04
k = 9, error =   1.31183293e-04
k = 10, error =   4.58815306e-05
k = 11, error =   1.60490331e-05
k = 12, error =   5.61360428e-06
k = 13, error =   1.96354578e-06
k = 14, error =   6.86812290e-07
Reseni:
   x      y(x)
0.000,   0.832126
0.050,   0.784148
```

```
0.100,   0.740938
0.150,   0.701854
0.200,   0.666361
0.250,   0.634014
0.300,   0.604437
0.350,   0.577316
0.400,   0.552386
0.450,   0.529426
0.500,   0.508256
0.550,   0.488731
0.600,   0.470745
0.650,   0.454232
0.700,   0.439173
0.750,   0.425607
0.800,   0.413646
0.850,   0.403502
0.900,   0.395524
0.950,   0.390252
1.000,   0.388495
```



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