

## Metoda niejawna. Przykład 1 - obliczenia

$$dx := 0.2 \quad \underline{dt} := 4000 \quad a := 2 \cdot 10^{-6} \quad \underline{c} := \frac{a \cdot dt}{dx^2} \quad c = 0.2$$

$$u0 := 500 \quad uL := 60$$

$$\underline{m} := 18 \quad n := 500$$

$$i := 0 .. m \quad up_i := 60$$

$$\underline{A}_{0,0} := -2 \cdot c - 1 \quad A_{0,1} := c$$

$$A_{m,m-1} := c \quad A_{m,m} := -2 \cdot c - 1$$

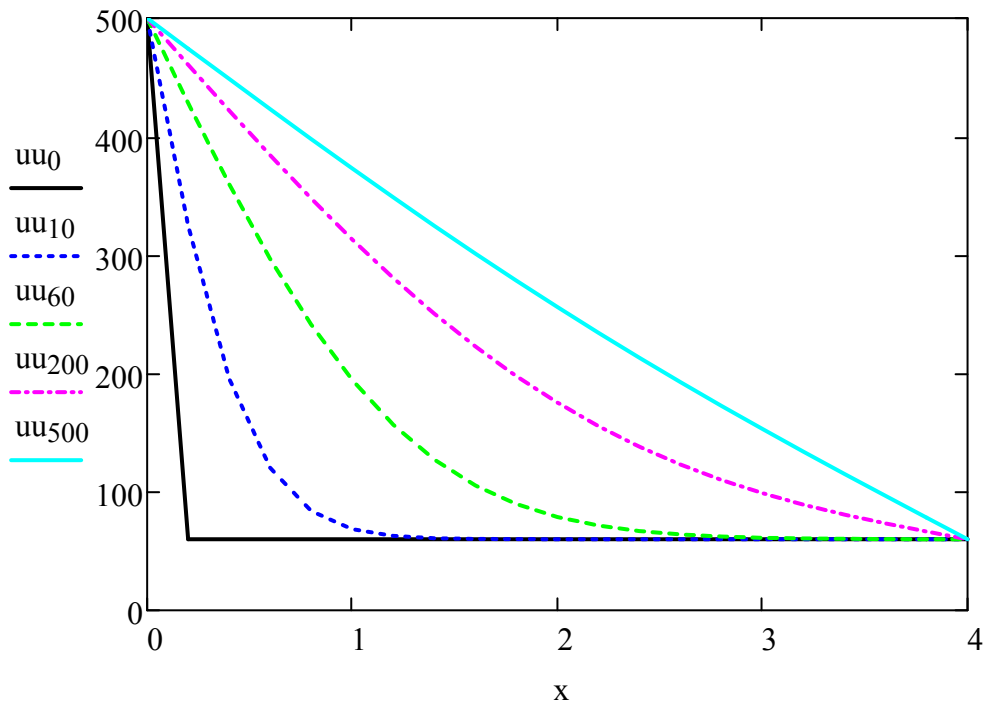
$$i := 1 .. m - 1$$

$$A_{i,i-1} := c \quad A_{i,i} := -2 \cdot c - 1 \quad A_{i,i+1} := c$$

$$uu := \left| \begin{array}{l} us \leftarrow up \\ uu_0 \leftarrow \text{stack}(u0, up, uL) \\ \text{for } j \in 1 .. n \\ \quad \left| \begin{array}{l} b_0 \leftarrow -c \cdot u0 - us_0 \\ b_m \leftarrow -c \cdot uL - us_m \\ \text{for } i \in 1 .. m - 1 \\ \quad b_i \leftarrow -us_i \\ us \leftarrow \text{lsolve}(A, b) \\ uu_j \leftarrow \text{stack}(u0, us, uL) \end{array} \right. \\ uu \end{array} \right.$$

$$j := 0 .. n \quad t_j := j \cdot dt$$

$$i := 0 .. m + 2 \quad x_i := dx \cdot i$$



$t_0 = 0$

$t_{10} = 40000$

$t_{60} = 240000$

$uu_0 =$

	0
0	500
1	60
2	60
3	60
4	60
5	60
6	60
7	60
8	60
9	60
10	60
11	60
12	60
13	60
14	60
15	60
16	60
17	60
18	60
19	60
20	60

$uu_{10} =$

	0
0	500
1	324.81
2	195.359
3	120.152
4	83.794
5	68.547
6	62.833
7	60.878
8	60.257
9	60.071
10	60.019
11	60.005
12	60.001
13	60
14	60
15	60
16	60
17	60
18	60
19	60
20	60

$uu_{60} =$

	0
0	500
1	428.275
2	359.581
3	296.557
4	241.149
5	194.444
6	156.67
7	127.335
8	105.438
9	89.714
10	78.837
11	71.584
12	66.913
13	64.007
14	62.257
15	61.236
16	60.658
17	60.339
18	60.165
19	60.066
20	60