

2-1. naloga: branje podatkov iz datoteke in reševanje sistema enačb

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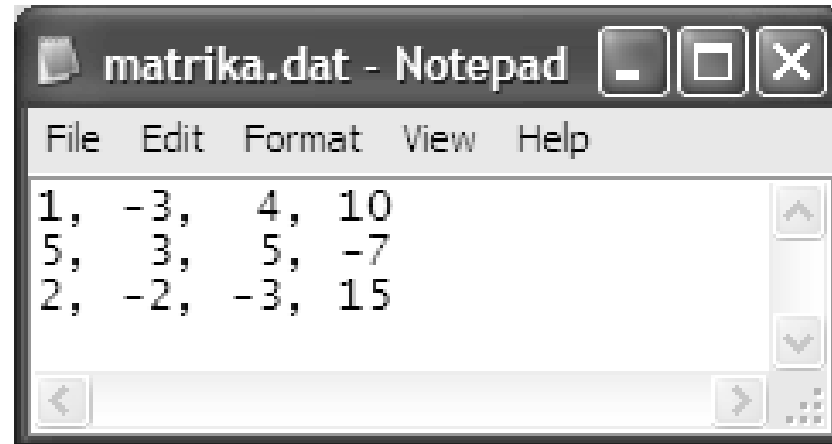
$$X - 3 Y + 4 Z = 10$$

$$5 X + 3 Y + 5 Z = -7$$

$$2 X - 2 Y - 3 Z = 15$$

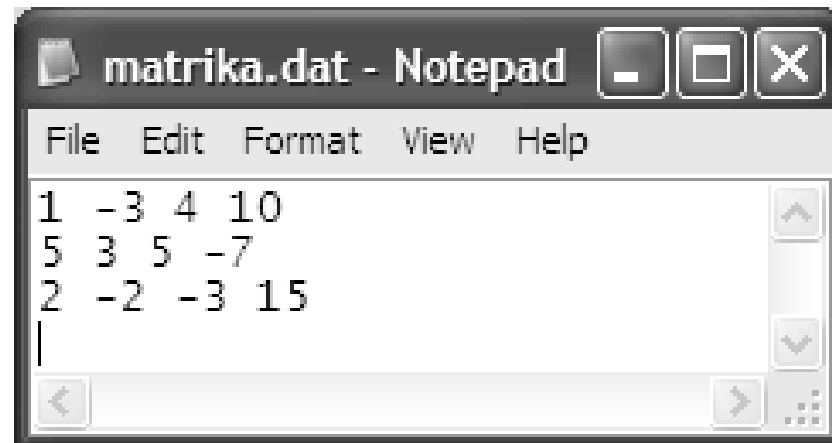
- preberite podatke iz datoteke *matrika.dat*
- z uporabo *Matlab*-ovega operatorja `\` rešite dani sistem enačb
- rezultate izpišite v urejeni obliki

2-1. naloga: branje podatkov iz datoteke in reševanje sistema enačb



matrika.dat - Notepad

```
File Edit Format View Help  
1, -3, 4, 10  
5, 3, 5, -7  
2, -2, -3, 15
```



matrika.dat - Notepad

```
File Edit Format View Help  
1 -3 4 10  
5 3 5 -7  
2 -2 -3 15  
|
```

2-1. naloga: branje podatkov iz datoteke in reševanje sistema enačb

The image shows the MATLAB software interface. The main window is titled "Editor - C:\2010_11-NM-RR-redni-vaje\3_vaja\Vaja_3_3A.m". The script contains the following code:

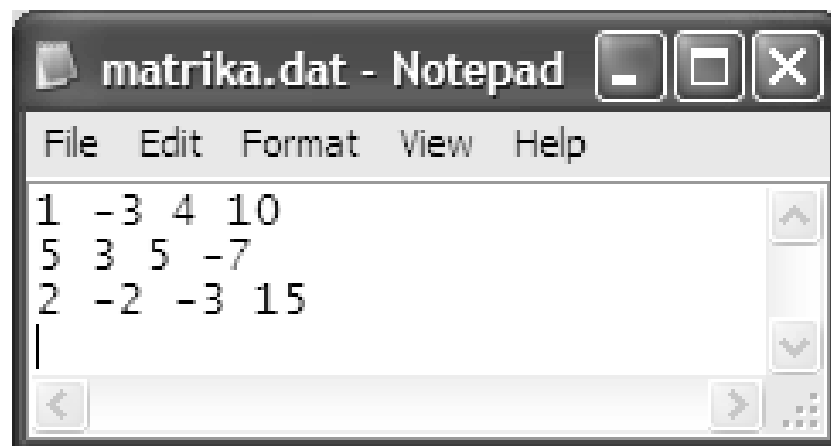
```
1 %  
2 % branje iz datoteke in reševanje sistema enačb  
3 %  
4 - clc;  
5 - clear all;  
6 - M=load('matrika.dat');  
7 - VD=M(:,4);  
8 - M(:,4)=[];  
9 %  
10 - X=M\VD;  
11 %  
12 - fprintf('Resitev sist. enačb je: \n')  
13 - fprintf('\tX = %+6.1f \r', X(1));  
14 - fprintf('\tY = %+6.1f \r', X(2));  
15 - fprintf('\tZ = %+6.1f \r', X(3));
```

The Command Window on the right displays the output of the script:

```
Resitev sist. enačb je:  
X = +2.0  
Y = -4.0  
Z = -1.0  
>> |
```

The MATLAB interface also shows a file explorer on the left with files M, VD, and X. The bottom of the window shows the Start button and the OVR button.

2-1. naloga: branje podatkov iz datoteke in reševanje sistema enačb



A screenshot of a Notepad window titled "matrika.dat - Notepad". The window contains a 3x4 matrix of numbers. The menu bar includes "File", "Edit", "Format", "View", and "Help". The text in the window is as follows:

```
1 -3 4 10
5 3 5 -7
2 -2 -3 15
|
```

2-1. naloga: branje podatkov iz datoteke in reševanje sistema enačb

The image shows the MATLAB environment with the following components:

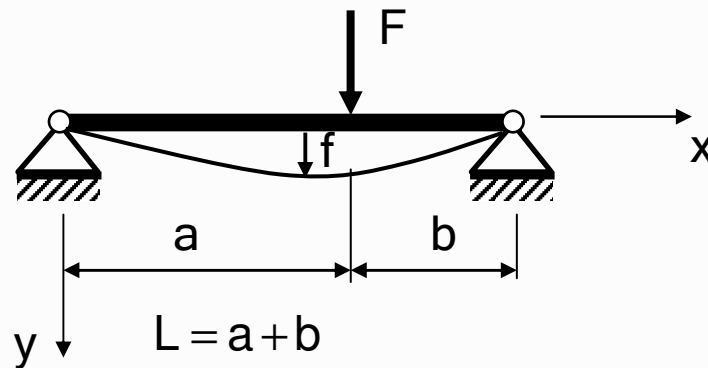
- Editor Window:** Displays the script `Vaja_3_3B.m` with the following code:

```
1 %  
2 % branje iz datoteke in reševanje sistema enačb  
3 %  
4 - clc;  
5 - clear all;  
6 - [M1,M2,M3,M4]=textread('matrika.dat','%f%f%f%f');  
7 - M=[M1 M2 M3];  
8 - VD=M4;  
9 %  
10 - X=M\VD;  
11 %  
12 - fprintf('Resitev sist. enačb je: \n')  
13 - fprintf('\tX = %+6.1f \r', X(1));  
14 - fprintf('\tY = %+6.1f \r', X(2));  
15 - fprintf('\tZ = %+6.1f \r', X(3));
```
- Command Window:** Shows the output of the script:

```
Resitev sist. enačb je:  
X = +2.0  
Y = -4.0  
Z = -1.0  
>>
```
- File Explorer:** Shows a directory structure with files `M`, `M1`, `M2`, `M3`, `M4`, `VD`, and `X`.
- Taskbar:** Shows the Windows Start button and the MATLAB application icon.

2-2. naloga: upogibno obremenjeni nosilec

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$$F = 10 \text{ kN}$$

$$a = 3 \text{ m}$$

$$b = 2 \text{ m}$$

$$E = 2 \cdot 10^5 \text{ MPa}$$

$$J = 5 \cdot 10^6 \text{ mm}^4$$

$$0 \leq x \leq a:$$

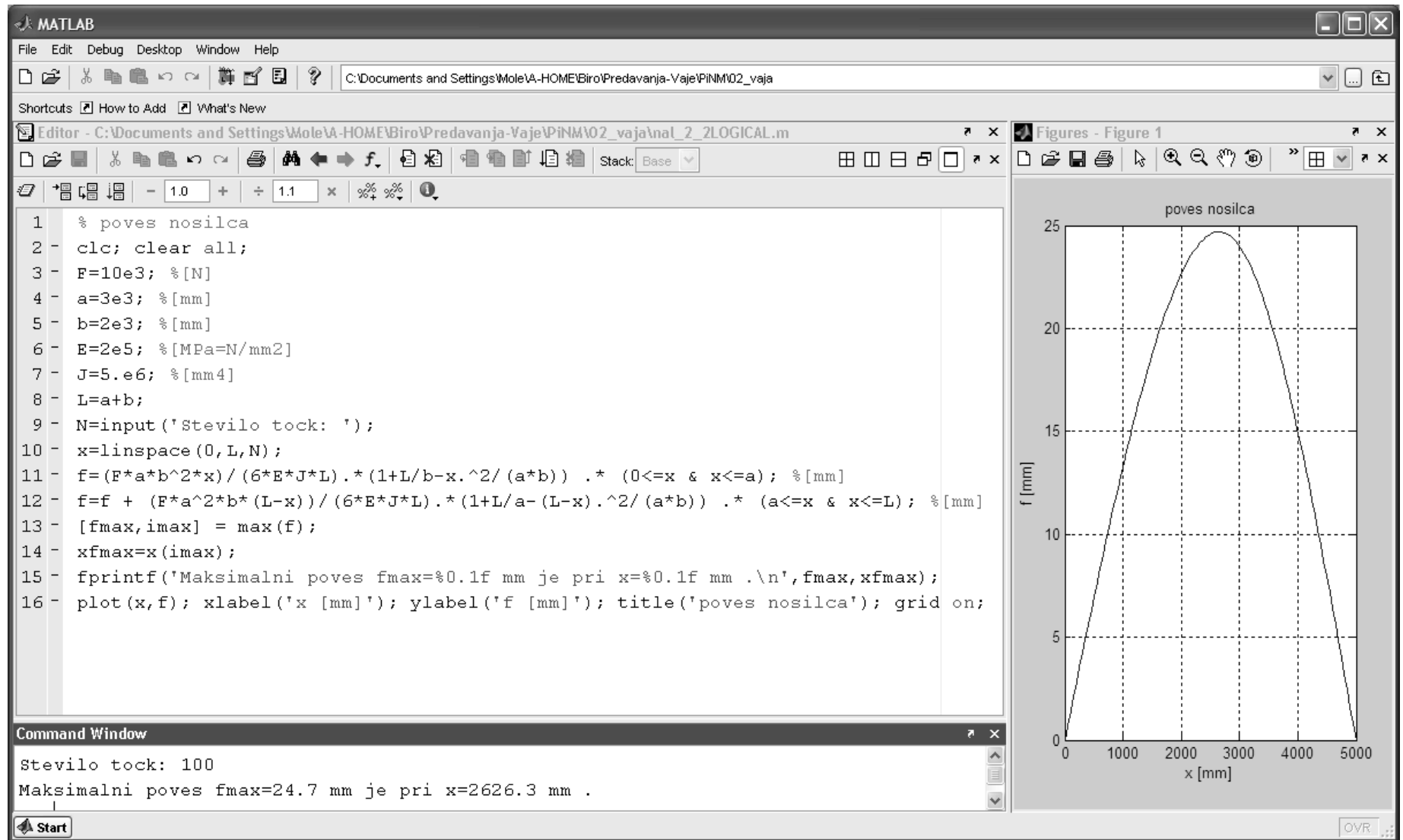
$$f_1(x) = \frac{Fab^2 x}{6EJL} \left(1 + \frac{L}{b} - \frac{x^2}{ab} \right)$$

$$a \leq x \leq L:$$

$$f_2(x) = \frac{Fa^2 b(L-x)}{6EJL} \left(1 + \frac{L}{a} - \frac{(L-x)^2}{ab} \right)$$

- izračunajte velikost maksimalnega povesa in lego le-tega
- izrišite upogibnico

2-2. naloga: upogibno obremenjeni nosilec



2-3. naloga: odsekoma linearna interpolacija

2-3. naloga: odsekoma linearna inetrpolacija

- podane so sledeče izmerjene toplotne prevodnosti pri posamezni temperaturi

T [°C]	20	50	100	150	200	300	500
K [W/mK]	58	57	51	48	47	41	40

- za podano temperaturo določite z odsekoma linearno interpolacijo vrednost toplotne prevodnosti in jo grafično prikažite
- odsekoma linearna interpolacija:

$$h_i = x_{i+1} - x_i, \quad i = 1, 2, \dots, (N-1)$$

$$\psi_1(x) = \frac{x_2 - x}{h_1}, \quad x_1 \leq x \leq x_2$$

$$\psi_i(x) = \begin{cases} 0 & , x \leq x_{i-1} \\ \frac{x - x_{i-1}}{h_{i-1}} & , x_{i-1} < x \leq x_i \\ \frac{x_{i+1} - x}{h_i} & , x_i < x \leq x_{i+1} \\ 0 & , x_{i+1} < x \end{cases}, \quad i = 2, 3, \dots, (N-1)$$

$$\psi_N(x) = \frac{x - x_{N-1}}{h_{N-1}}, \quad x_{N-1} \leq x \leq x_N$$

$$F(x) = \sum_{i=1}^N \psi_i(x) F_i$$

2-3. naloga: upogibno obremenjeni nosilec

