The beam in the figure below is loaded by the constant distributed load (f). The beam span and dimensions of two cross sections are shown in the figure. The elastic material of the beam is assumed.

For a given structure:

- a) Draw the internal force and bending moment diagrams for a given uniform distributed load.
- b) Determine the "x" position of the most loaded cross section.

For both cross sections:

- c) Calculate the cross sectional properties (I_y, I_z, D_{yz}) .
- d) Determine the coordinates of the points with the highest normal stress.
- e) Calculate the extreme values (i.e., maximum and minimum) of the normal stress.
- f) Draw the normal stress distribution.

