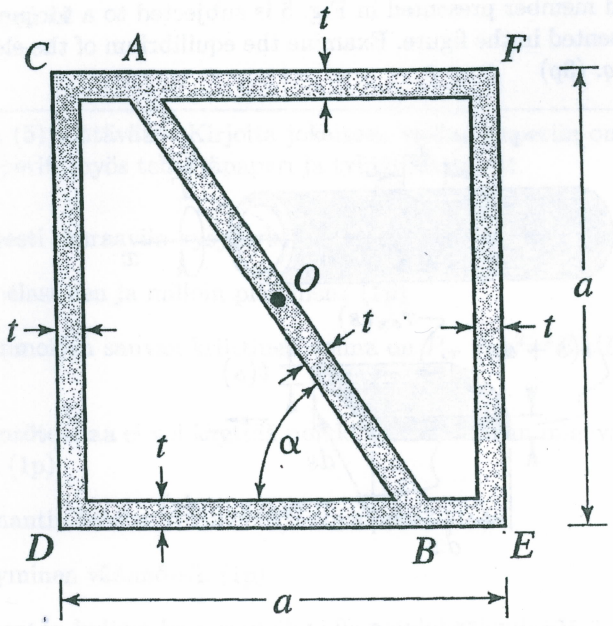


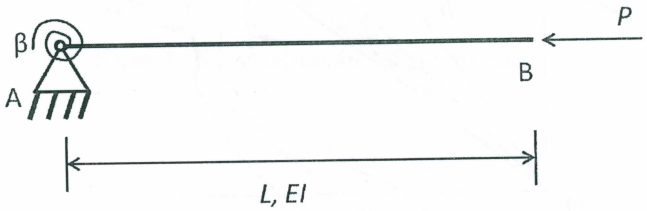
Kuva 3: Figure of exercise 3.

Problem 4. Derive the characteristic equation for the structure shown in the figure. Spring constant is β, bending stiffness of the rod is EI and length is L. (6p)

Hint: Use a differential equation of third degree. The equation is found by differentiating the equation

$$EIv''(x) = -M(x). \tag{1}$$

Mark $\lambda^2 = P/(EI)$ and displacement at the free end is Δ.



Kuva 4: Figure of problem 4