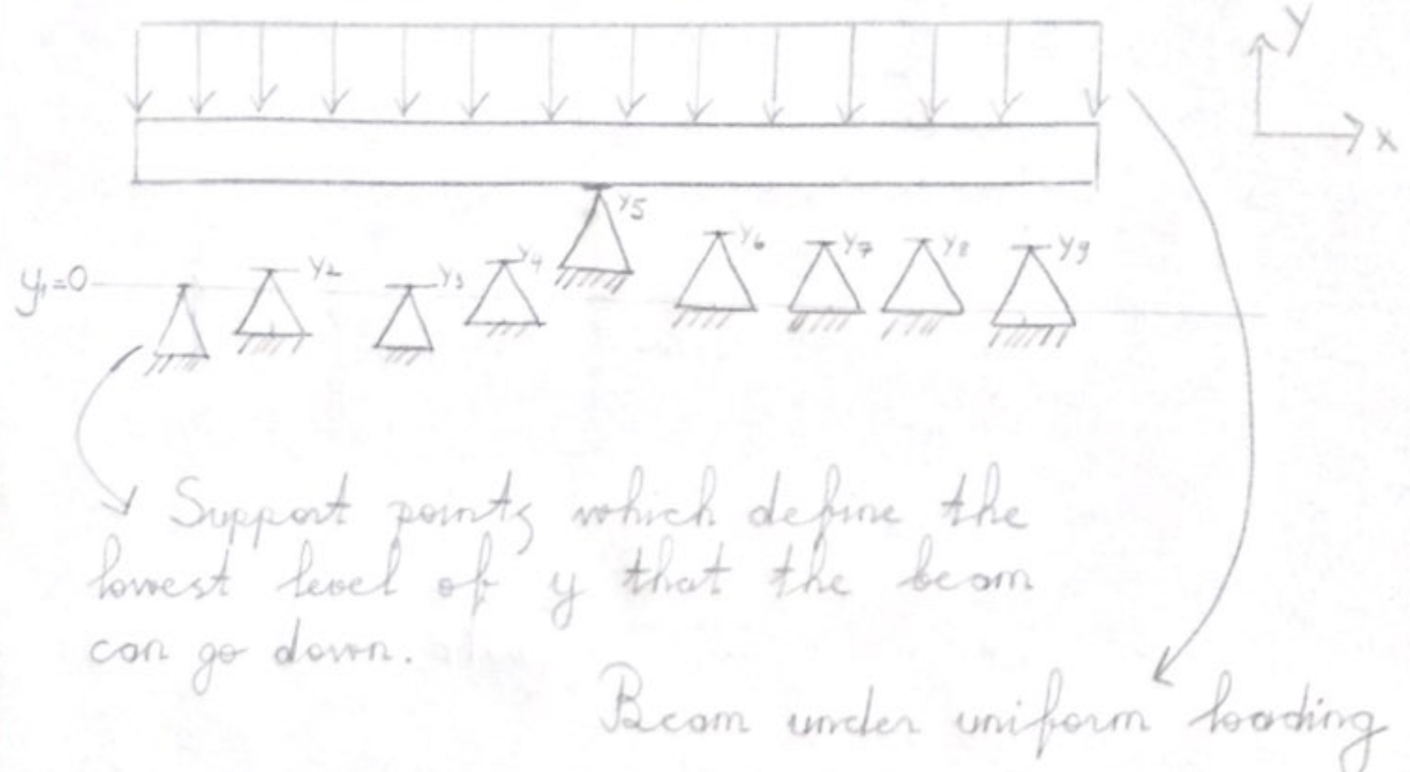
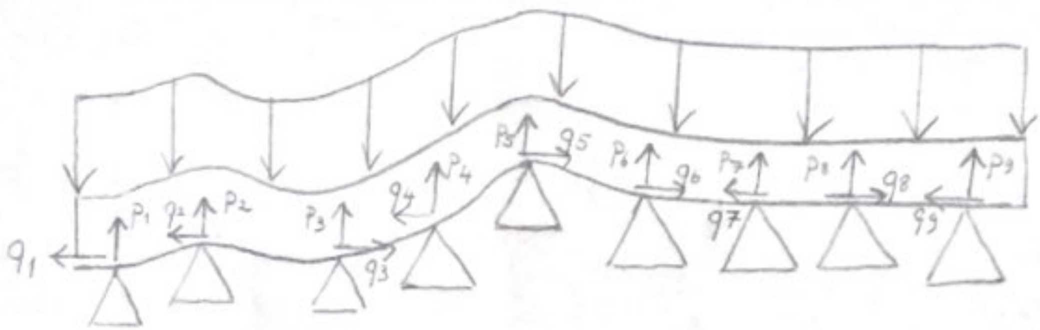
Initial Picture



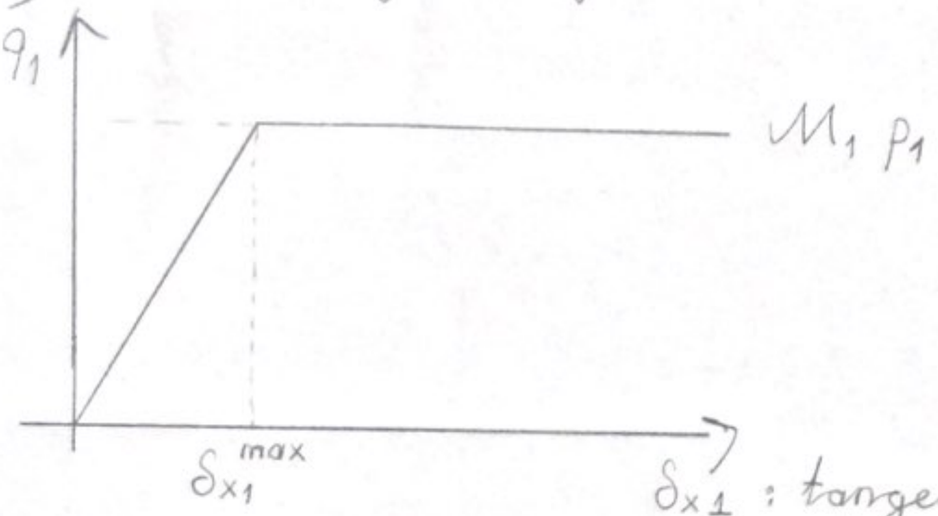
These support points constraint the deflection of the beam along the y axis but the beam is free to rotate around them and also free to move along the x axis, i.e the points lying on the beam and making the first contact with these support points can slide along the x direction due to deformation of the beam

Final Picture



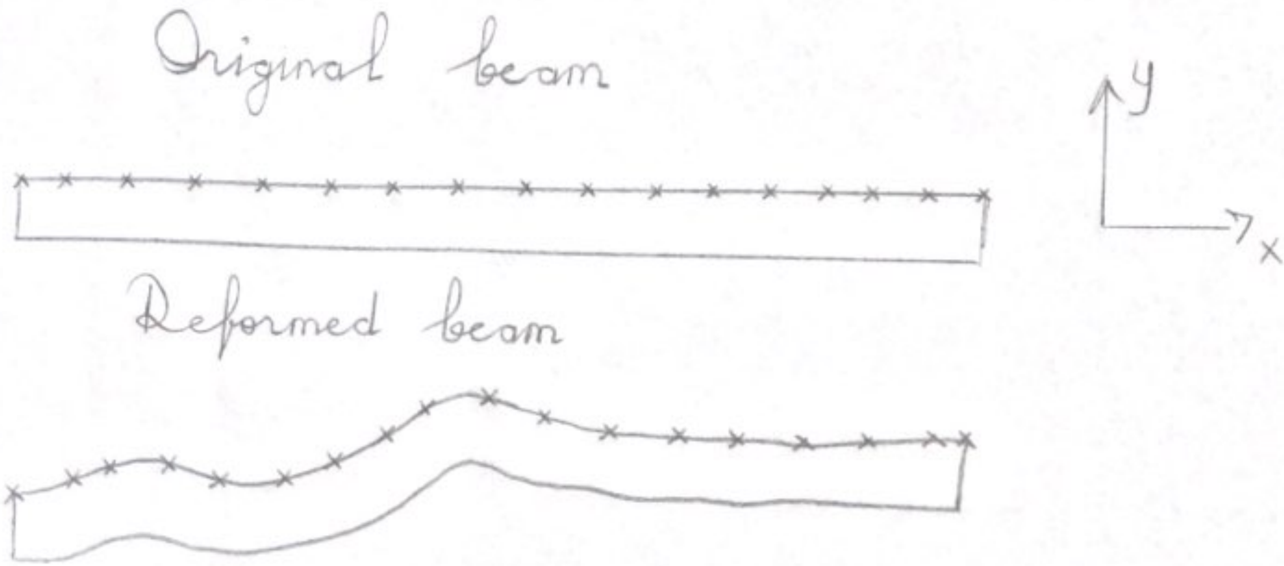
Support #	1	2	3	4	5	6	7	8	9
Normal Force Applied by Support	P_1	P_2	P_3	P_4	P_5	P_6	P_7	P_8	P_9
Tangential Force Applied by Support	q_1	q_2	q_3	q_4	q_5	q_6	q_7	q_8	q_9

I would like to define functions relating the tangential forces that the support points apply on the beam to the normal forces that they apply such that:



δ_{x1} : tangential motion of the cantilever node that touches Support 1.

According to this function, the tangential force by a support point increases linearly up to $\delta_{x_1}^{max}$ and stays constant at $\mu_1 p_1$



What I will supply as inputs to the simulation

1-) Thickness, length & material properties of the beam.
2-) Magnitude of distributed load
3-) $y_1, y_2, y_3 \cdots y_9$: the levels where support points lie.
4-) The threshold tangential displacement values for each support point : $\delta_{x_1}^{max}, \delta_{x_2}^{max}, \ldots \delta_{x_9}^{max}$
5-) The coefficients $\mathcal{M}_1, \mathcal{M}_2, \mathcal{M}_3, \ldots, \mathcal{M}_9$.

What I would like to calculate

1-) The deflections of points lying at the top surface of the cantilever along the x axis.