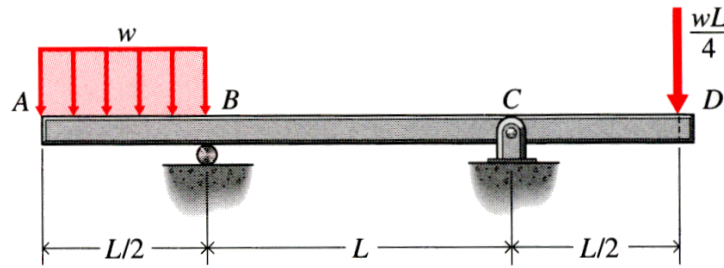


Determine the deflection at a point midway between the supports of the beam shown in the figure below. Show work clearly and put your answer in the box at the bottom of the page.



Handwritten work showing the calculation of the deflection δ at the midpoint between supports B and C.

Two equivalent point loads are derived from the distributed load and the point load:

$$\left(\frac{L}{4}\right)\left(\frac{wL}{2}\right) = \frac{wL^2}{8}$$

$$\left(\frac{L}{2}\right)\left(\frac{wL}{4}\right) = \frac{wL^2}{8}$$

The beam is then modeled as a simply supported beam with two point loads of $\frac{wL^2}{8}$ acting downwards at the ends of the span between B and C.

$$y = \left[\frac{\left(\frac{wL^2}{8}\right)\left(\frac{L}{2}\right)}{6LEI} \left[2L^2 - 3L\left(\frac{L}{2}\right) + \left(\frac{L}{2}\right)^2 \right] \right] (2) = \frac{wL^4}{64EI}$$

$\delta =$