

All assignments are to be submitted on engineering paper. You may use any type of engineering paper as long as it has a background grid. The example page below is for the paper available in the bookstore. If an alternate form of paper is used, the headings at the top of the page should be modified to match the printed partitions; however, the remainder of the instructions applies equally to either form.

Staple pages

Course Number

Assignment Number

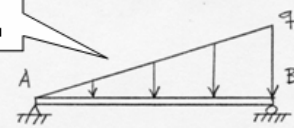
Name

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7.4-7 DETERMINE THE EQUATION OF THE DEFLECTION CURVE FOR A SIMPLE BEAM SHOWN BELOW. DETERMINE MAXIMUM DEFLECTION δ_{max} .

Use a straight edge for all sketches, not just for the problem statement sketch



Engineering principles and assumptions require to work problem

$$q(x) = \frac{q_0 x}{L}$$

$$EI v'''' = q = \frac{q_0 x}{L}$$

$$EI v'''' = \frac{q_0 x^2}{2L} + C_1$$

$$EI v''' = \frac{q_0 x^3}{6L} + C_1 x + C_2$$

$$EI v'' = \frac{q_0 x^4}{24L} + C_1 \frac{x^2}{2} + C_2 x + C_3$$

$$EI v = \frac{q_0 x^5}{120L} + C_1 \frac{x^3}{6} + C_2 \frac{x^2}{2} + C_3 x + C_4$$

BOUNDARY CONDITIONS: $v(0) = v(L) = 0$ $v''(0) = v''(L) = 0$

$$EI v''(0) = 0 = C_2 \quad \underline{C_2 = 0} \quad EI v(0) = 0 = C_4 \quad \underline{C_4 = 0}$$

$$EI v''(L) = 0 = \frac{q_0 L^2}{6} + C_1 L \quad \underline{C_1 = -\frac{q_0 L}{6}}$$

$$EI v(L) = 0 = \frac{q_0 L^4}{120} + \left(-\frac{q_0 L}{6}\right) \frac{L^3}{6} + C_3 L \quad \underline{C_3 = \frac{7q_0 L^3}{360}}$$

$$\Rightarrow v(x) = \frac{q_0 x}{360EI L} \left[7L^4 - 10L^2 x^2 + 3x^4 \right]$$

Double underline answer with units

Use engineering paper

Work should be done in pencil, and a lead hardness should be used that produces good contrast to the paper. Figures should be drawn with a straightedge and, if appropriate, a circle template or a compass. The layout and appearance of your work should be of professional quality. Work on no more than one problem per page. Do not use the back of a page for any reason. All pages should be ordered by page number and stapled. A good guide for this standard is to prepare each assignment as if it were to be kept on file and sent to prospective employers as an example of your work at the University of Memphis.

Homework is due at the beginning of class on the due date. **Late homework will not be accepted for any reason.** To account for a missed assignment, even with a valid excuse, one homework assignment will be dropped for consideration in computing the homework average.