

ENDS 231: Practice Quiz 8

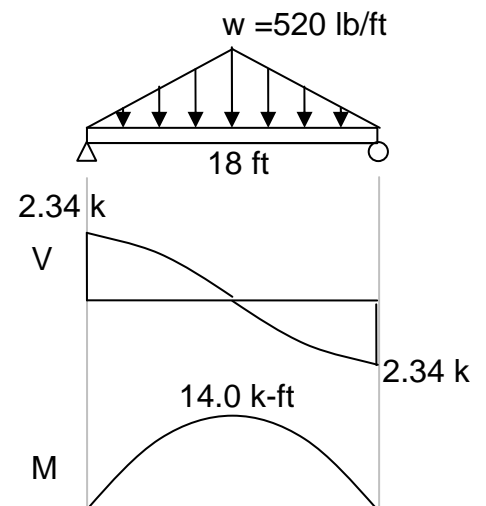
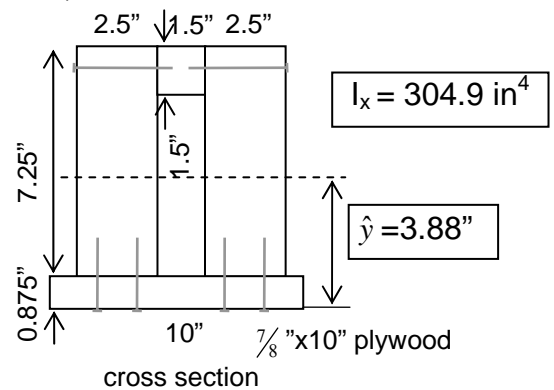
*Note: A one page (one sided) crib sheet is allowed during the quiz, along with a silent, **non-programmable** calculator.*

Clearly show your work and answer.

A lintel beam 18 ft long is used in carrying the imposed loads. It is a built up section 8.125" deep of 3 x 8 sides with a 2 x 2 top (2 nails) and a 1 x 10 plywood bottom (4 nails) as shown. The centroid and moment of inertia for bending about the x axis is given in the figure.

Find: 2-3x8 (2.5"x7.25")
with a 2x2 (1.5"x1.5")

- the maximum bending stress for the section, f_b
- the required shear capacity of the nails for the top [or bottom] connected part if the pitch spacing is 3.5 inches
- the maximum deflection in the beam knowing $E = 1.6 \times 10^6$ psi
- [some short question from the text material]



Answers:

- $f_b = 2339$ psi
- $F \geq 105$ lb [or 203 lb]
- $\Delta_{\max} = 1.61$ in

Disclaimer: Answers have NOT been painstakingly researched.