ENDS 231: Practice Quiz 8

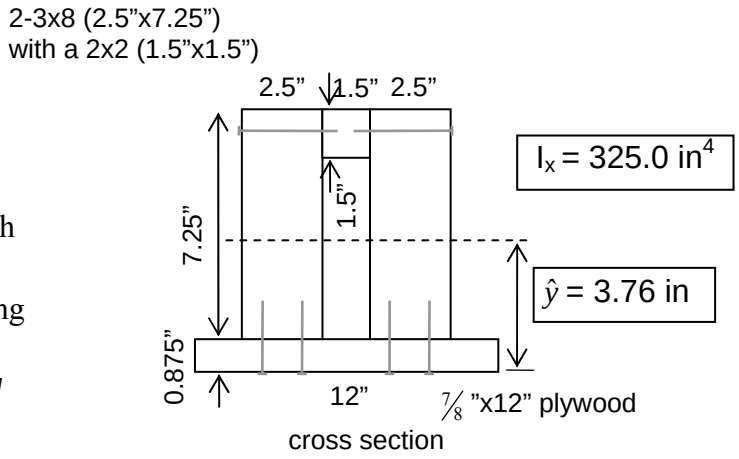
*Note: A one page (one sided) crib sheet is allowed during the quiz, along with a silent, **non-programmable** calculator.*

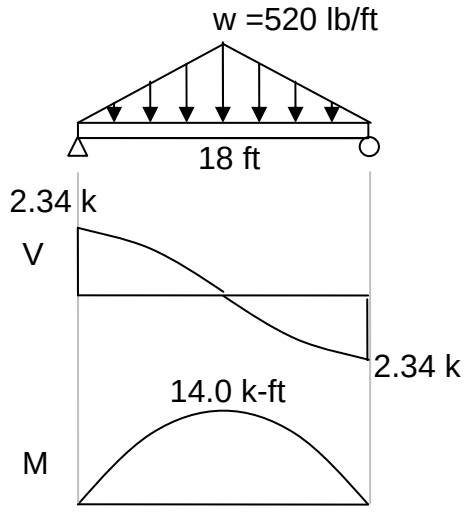
Clearly show your work and answer.

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 7/8 x 12 plywood bottom (4 nails) as shown. The centroid and moment of inertia for bending about the x axis is given in the figure.

Find:

a) the maximum bending stress for the section, f_b
b) the required shear capacity of the nails for the top [or bottom] connected part if the pitch spacing is 5.75 inches
c) the maximum deflection in the beam knowing E = 1.5 x 10^6 psi
d) *[some short question from the text material]*





Answers:

a) f_b = 2256 psi
b) F ≥ 168.3 lb [or 361.2 lb]
c) Δ_{max} = 1.61 in

Disclaimer: Answers have NOT been painstakingly researched.