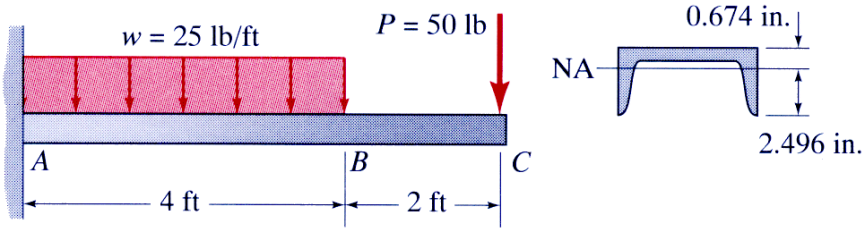
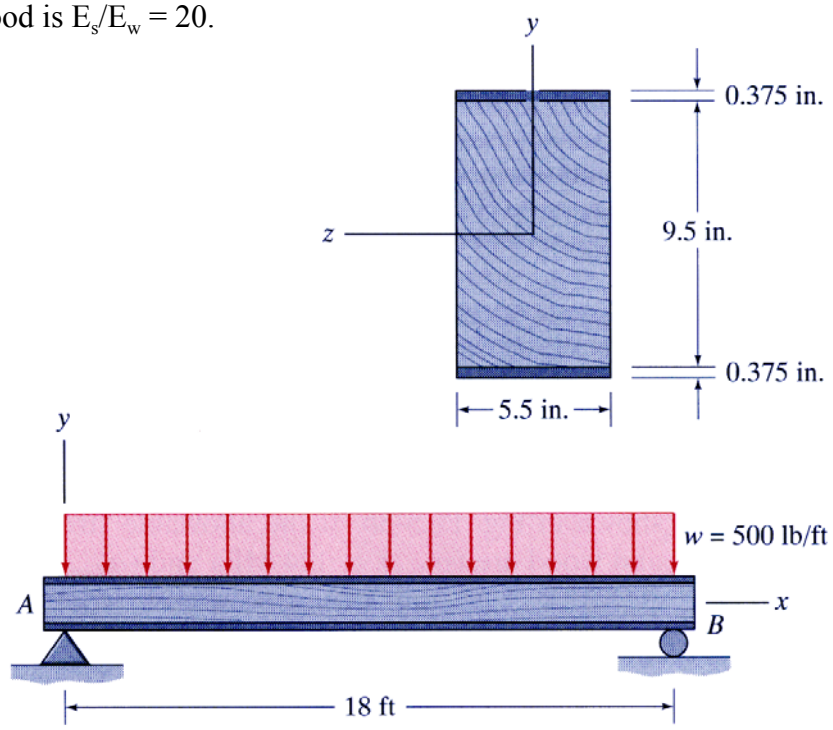
BE 110B W03 Test 2 Name: _____

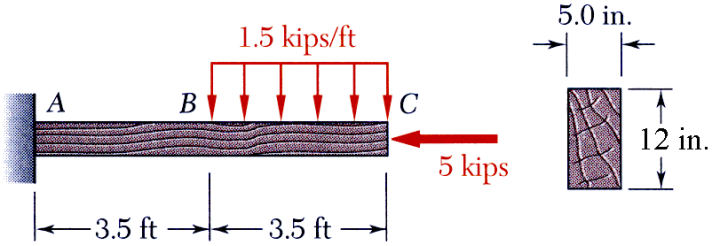
1. A channel section is used as a cantilever beam to support the shown loads. Determine the maximum tensile $(F_{max})_t$ and compressive $(F_{max})_c$ normal stresses at end A. The relevant dimensions of the cross section are shown, and the moment of inertia about the neutral axis (NA) is I = 5.14 in^4.



2. A steel-reinforced timber beam is used as a simply supported beam to carry the distributed load shown. Determine the maximum normal stresses in the steel $(F_{max})_s$ and the wood $(F_{max})_w$. The ratio of elastic moduli of the steel and wood is $E_s/E_w = 20$.



3. The cantilever beam has combined axial compression and flexural loadings as shown. Assume the axial compression load acts at the centroid of the rectangular cross section. Determine the maximum normal stress on the top $(F_{max})_t$ and bottom $(F_{max})_b$ surfaces of the beam.



4. Two boards are attached together by screws that are spaced at regular intervals $s = 12$ inches along the length of the beam to form an inverted tee beam. Each screw has an allowable shear-force capacity of $V_s = 480$ lb. What is the maximum allowable load **P**?