ME 478 Homework #4

Please show your work and draw a box around your answers to receive full credit.

1) For the beam shown in Figure 1, its cross-sectional area is 10.3 in^2, second moment of area is 510 in^4 and its modulus of elasticity is $E = 29 \times 10^6$ lb/in^2. The beam is subjected to a uniformly distributed load (2000 lb/ft). Use Matlab to solve for the displacements and the reaction forces/moments at the three nodes. What is the displacement at the midpoint between nodes 1 and 2?

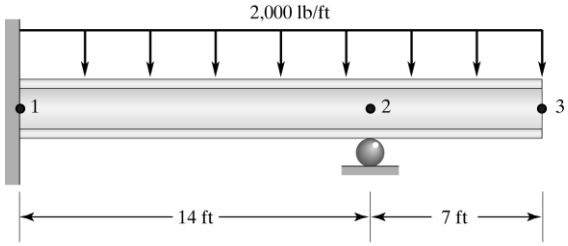

Figure 1. Uniformly loaded beam.

2) A lamp frame shown in Figure 2 has a hollow, square cross-section and is made from steel ($E = 29 \times 10^6$ lb/in^2). Use Matlab to solve for the displacement of the endpoint where the 40 lb lamp is attached.

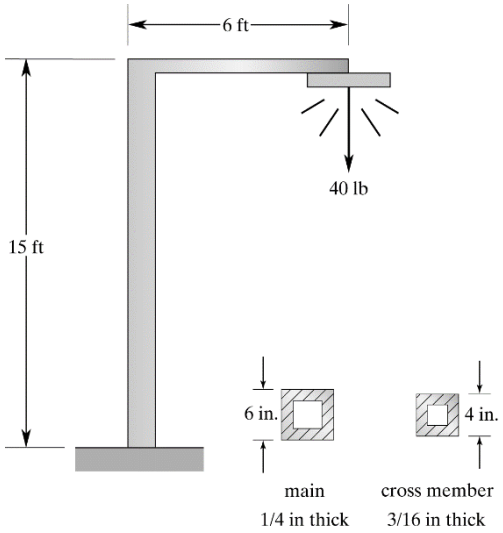

Figure 2. Lamp post.