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

1) A beam shown in Figure 1 has a cross-sectional area of 10.3 in^2 and a depth of 17.7 in. Its second moment of area is 510 in^2 and its modulus of elasticity is $E = 29 \times 10^6$ lb/in^2. The beam is subjected to a uniformly distributed load of 2000 lb/ft. Use Matlab to solve for the displacements and the reaction forces/moments at the three nodes.
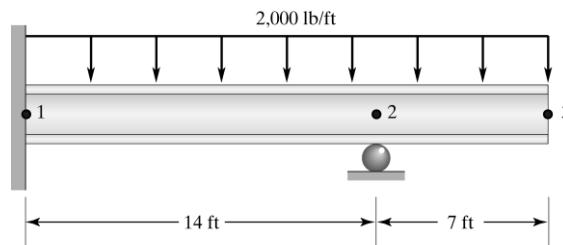

Figure 1. Uniformly loaded beam.

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.
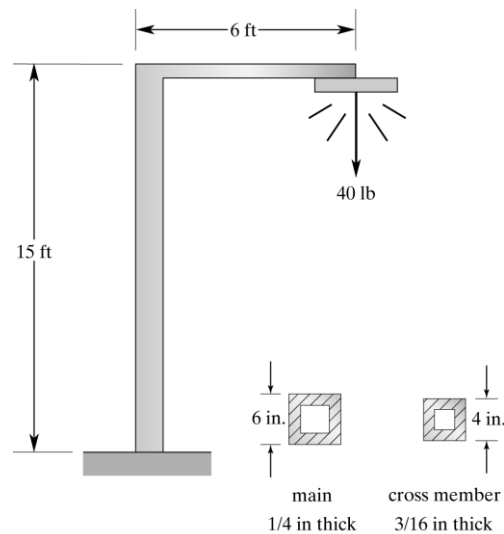

Figure 2. Lamp post.