**HOMEWORK #5**

Due: Lecture #13

1) What is the degree of static indeterminacy of each of the following structures? For each structure, propose two ways to make it statically determinate.

![Figure 1](image1.png)  ![Figure 2](image2.png)

2) For the beam shown in Figure 3 below, calculate the support reactions at point A assuming:

a) the vertical reaction at B is 64 kips;
b) the vertical reaction at B is 40 kips;
c) the vertical reaction at B is 20 kips; and
d) the vertical reaction at B is zero.

For each case, draw the shear and bending moment diagram. Clearly label the location and magnitude of maximum moment in the beam.

![Figure 3](image3.png)

3) Based on the results of your analysis from the previous question, how would you recommend supporting the beam of Figure 3 in order to minimize the size of the beam required? Can you see a way to decrease the required size of the beam even further? (Hint: Think of a way to minimize the maximum value of moment in the beam.)