1. The beam consists of two segments pin connected at B, as shown in **Fig. 1**. Draw the shear and moment diagrams for the beam. (25%)

2. The man attempts to support the load of boards having a weigh W and a center of gravity at G (**Fig. 2**). If he is standing on a smooth floor, determine the smallest angle θ at which he can hold them up in the position shown. Neglect his weight. (25%)

3. The man having a weight of 150 lb pushes horizontally on the bottom of crate A, which is stacked on top of crate B. Each crate has a weight of 100 lb. If the coefficient of static friction between each crate is 0.8 and between the bottom crate, his shoes, and the floor is 0.3, determine if he can cause impending motion (**Fig. 3**). (25%)

4. A beam is loaded and supported as shown in **Fig. 4**. Determine
   (a) The maximum deflection between the supports. (15%)
   (b) The deflection at the right end of the beam. (10%)

Fig. 1.

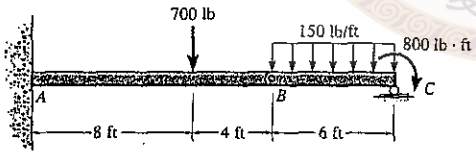


Fig. 2.

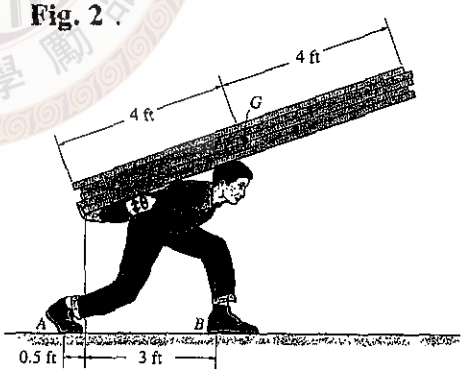


Fig. 3.

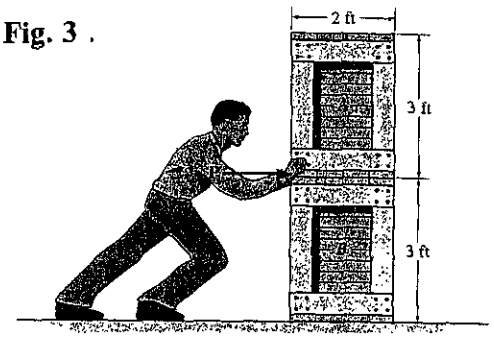
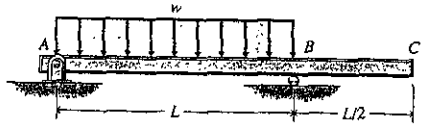


Fig. 4.



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