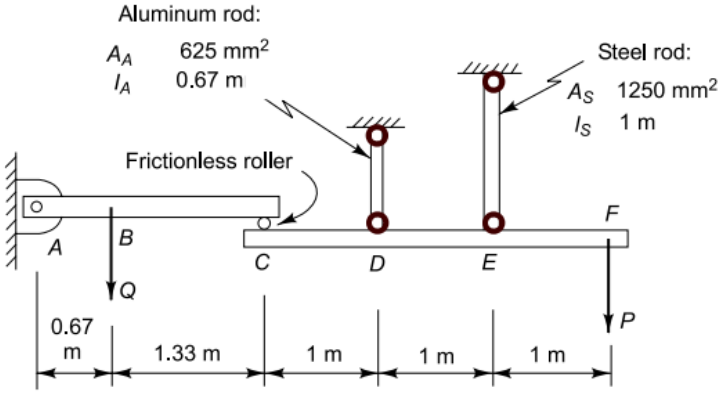
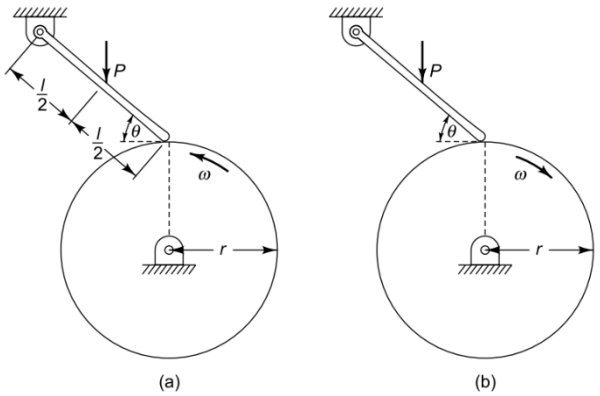
ESO202: Mechanics of Solids		
Tutorial 01	FBD	**7th August 2025**

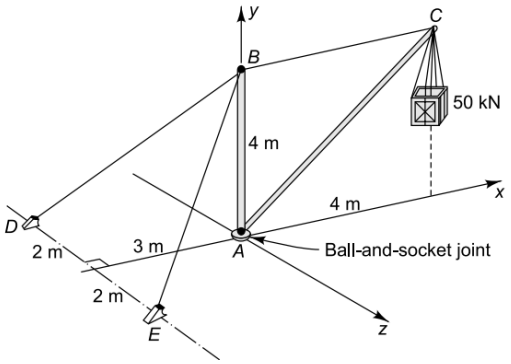
1. For the structure shown draw the free body diagram for the whole system and the individual systems. Is it a determinate or indeterminate system? Do not solve for the reactions. Assume all the rods have weights = *W*.



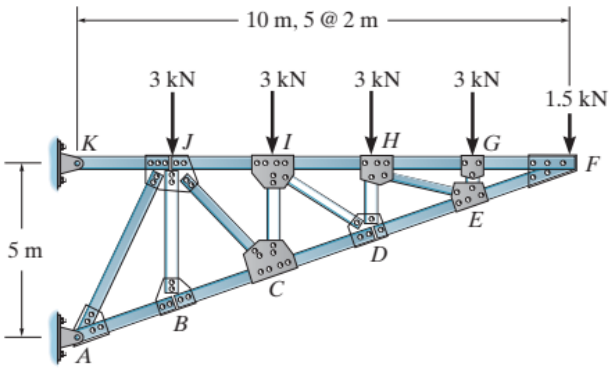
2. A freely pivoted light rod of length *l* is pressed against a rotating wheel by a force P applied to its middle. The friction coefficient between the rod and wheel materials is *f*. Compute, for both directions of rotation, the friction force *F* as a function of the variables l, *P*, and *f*, and any others which are relevant. One of these two situations is sometimes referred to as a friction lock. Which one, and why?



3. The crane shown is supported by cables BD and BE. Draw FBD. Determine the cable tensions.



4. For the truss below all joints are pin connected. Determine the forces in the member JI and IC.



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