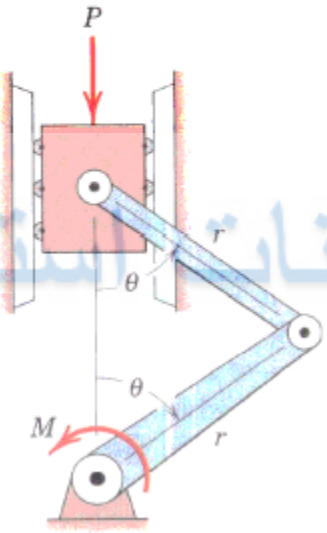
1

Determine the moment M applied to the lower link through its shaft which is necessary to support the load P in terms of the angle θ. Neglect the weights of the parts.



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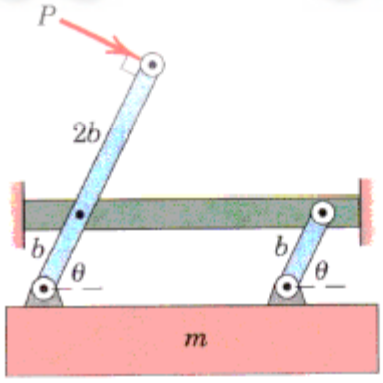
2

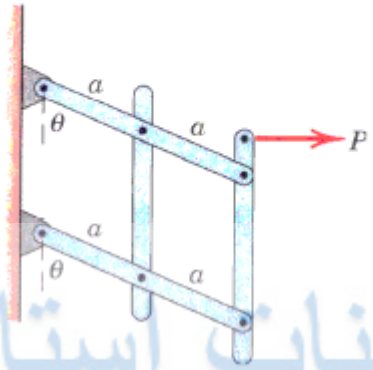
For a given force P determine the angle θ for equilibrium. Neglect the mass of the links.

دکتر شاطرزاده



3

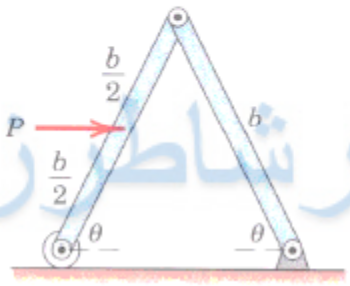
Each of the four uniform links has a mass m. Determine the horizontal force P required to hold them in place in the vertical plane as shown.



تمرینات استاتیک

4

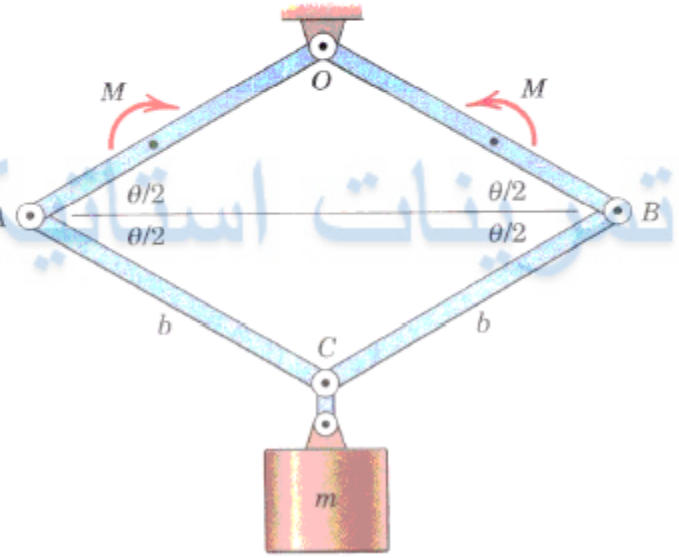
Replace the couple M of Prob. 7/6 by the horizontal force P as shown and determine the equilibrium angle θ.



دکتر شاطرزاده

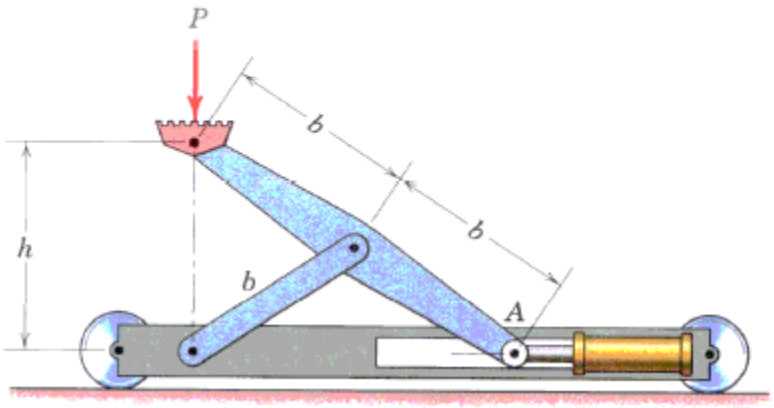
5

The symmetrical linkage supports the cylinder of mass m in the vertical plane by the action of the two couples M applied to OA and OB as shown. Determine the couple value M in terms of θ. The mass of the links is negligible compared with m.



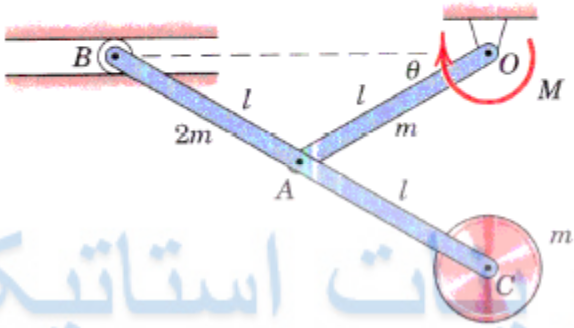
6

The portable car hoist is operated by the hydraulic cylinder which controls the horizontal movement of end A of the link in the horizontal slot. Determine the compression C in the piston rod of the cylinder to support the load P at a height h.



7

Determine the couple M which must be applied at O in order to support the mechanism in the position $\theta = 30°$. The masses of the disk at C, bar OA, and bar BC are m_0, m, and $2m$, respectively.



تمرینات استاتیک

8

The torque M applied to the light link OA through its shaft at O rotates OA through an angle θ and raises end A of the uniform bar AB of mass m. End B is supported by a small roller on the horizontal surface. When $\theta = 0$, the bar AB is horizontal. Determine the equilibrium angle for a given value of M. What would happen if M were greater than $mgr/2$?

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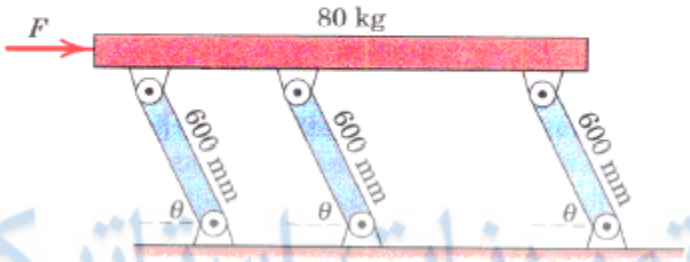
Specify the horizontal force F necessary to maintain equilibrium of the 80-kg platform in terms of the angle θ made by the supporting links with the horizontal. Each of the three uniform links has a mass of 10 kg. (Compare the solution by virtual work with a solution by force and moment equilibrium.)



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دکتر شاطرزاده