13.8 ** An 8.00-kg point mass and a 15.0-kg point mass are held in place 50.0 cm apart. A particle of mass \( m \) is released from a point between the two masses 20.0 cm from the 8.00-kg mass along the line connecting the two fixed masses. Find the magnitude and direction of the acceleration of the particle.
11.19 A 3.00-m-long, 240-N, uniform rod at the zoo is held in a horizontal position by two ropes at its ends (Fig. E11.19). The left rope makes an angle of 150° with the rod and the right rope makes an angle θ with the horizontal. A 90-N howler monkey (Alouatta seniculus) hangs motionless 0.50 m from the right end of the rod as he carefully studies you. Calculate the tensions in the two ropes and the angle θ. First make a free-body diagram of the rod.

Figure E11.19
End \( A \) of the bar \( AB \) in Fig. P11.53 rests on a frictionless horizontal surface, and end \( B \) is hinged. A horizontal force \( \vec{F} \) of magnitude 160 N is exerted on end \( A \). You can ignore the weight of the bar. What are the horizontal and vertical components of the force exerted by the bar on the hinge at \( B \)?
At what distance above the surface of the earth is the acceleration due to the earth's gravity 0.980 m/s$^2$ if the acceleration due to gravity at the surface has magnitude 9.80 m/s$^2$?
11.49  A uniform, 255-N rod that is 2.00 m long carries a 225-N weight at its right end and an unknown weight \( W \) toward the left end (Fig. P11.49). When \( W \) is placed 50.0 cm from the left end of the rod, the system just balances horizontally when the fulcrum is located 75.0 cm from the right end. (a) Find \( W \). (b) If \( W \) is now moved 25.0 cm to the right, how far and in what direction must the fulcrum be moved to restore balance?

Figure P11.49