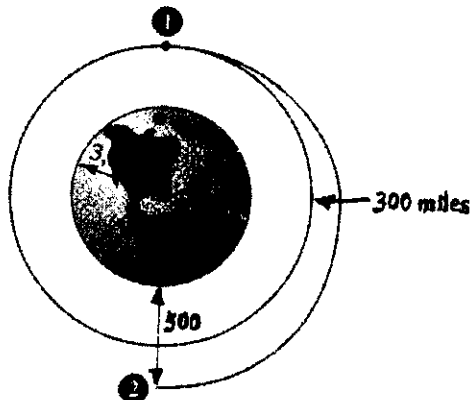
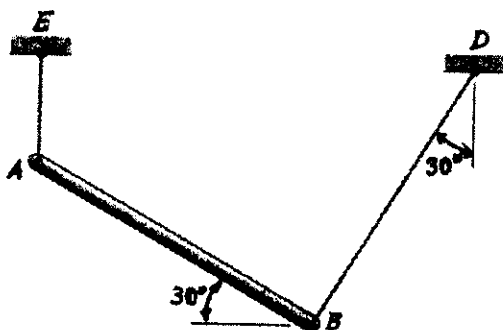


本試題是否可以使用計算機: 可使用, 不可使用 (請命題老師勾選)

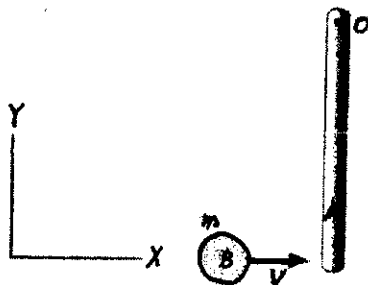
1. A space vehicle is in a circular parking orbit 300 miles above the surface of the earth. If the vehicle is to reach an apogee at location 2 which is 500 miles above the earth's surface, what increase in velocity must the vehicle attain by firing its rockets for a short time at location 1? The radius of the earth 3,960 miles. (15%)



2. A rod AB of length 3 m and weight 445 N is shown immediately after it has been released from rest. Compute the tension in wires EA and DB at this instant. (15%)



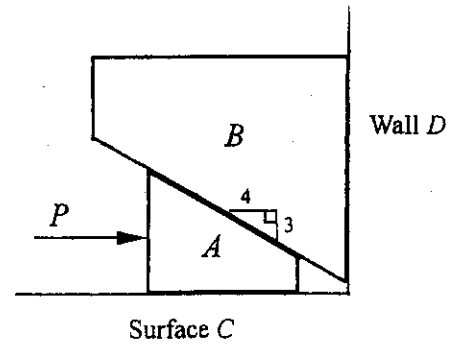
3. A 22-N sphere moving at a speed of 10 m/sec hits the end of a 1-m rod having a mass of 10 kg. The coefficient of restitution for the impact is 0.9. What is the postimpact angular velocity of the rod if it is stationary just before impact? The rod is pinned at O . (20%)



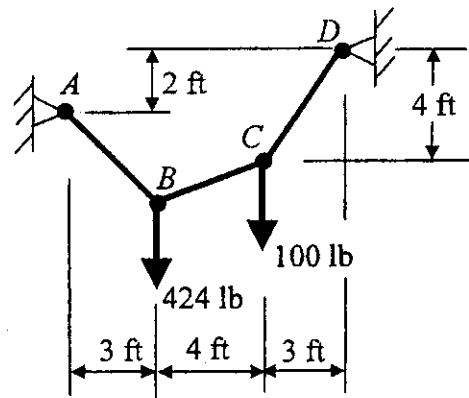
(背面仍有題目, 請繼續作答)

本試題是否可以使用計算機: 可使用, 不可使用 (請命題老師勾選)

4. (20%) The block B has a weight W . The coefficients of static friction between wedge A and block B , and between A and surface C , are $\mu_s = 1/3$. The wall D is smooth. Neglect the weight of the wedge. Determine the smallest force P needed to lift the block.



5. (15%) Determine the tension in each segment of the cable $ABCD$.



6. (15%) Two identical uniform links are connected as shown. The spring has an unstretched length of 0.28 m. Determine the mass of each link if the angle $\theta = 30^\circ$ for equilibrium.

