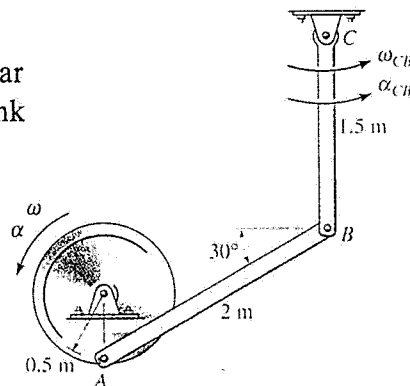1. The disk rotates with an angular velocity ω = **5rad/s** and an angular acceleration α = **6 rad/s^2**.　Determine the angular acceleration of link CB at this instant. (25%)

2. Two **750-N** engineering student **A** and **B** intend to jump off the bridge from rest using an elastic cord having a stiffness **k=1300 N/m.**　They wish to just reach the surface of the river, when **A**, attached to the cord, lets go of **B** at the instant they touch the water.　Determine the proper un-stretched length of the cord to do the stunt, and the maximum height he reaches above the water after the rebound.　**From your results, comment on the feasibility of doing this stunt.** (25%)
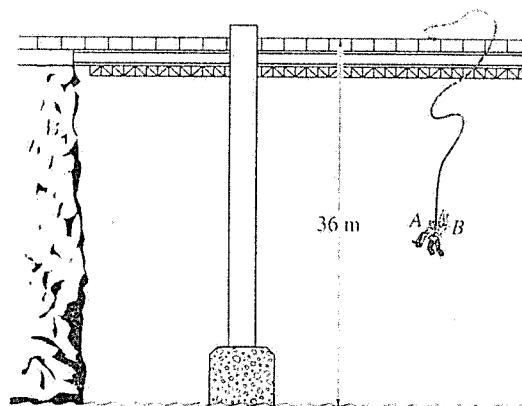
3. A uniform rod AB, of weight *30kg* and length *1 meter*, is attached to the *45-kg* cart C.　Knowing that the system is released from rest in the position shown in the figure and neglecting friction, determine **(a)** the velocity of point B as rod AB passes through a vertical position, **(b)** the corresponding velocity of cart C, **(b)** the angular acceleration of the rod. (25%)
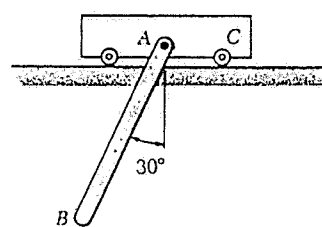
4. The disk has a mass *m* and radius *r*.　If it strikes the rough step having a height *0.125r* as shown, determine the smallest angular velocity ω_1 the disk can have and not rebound off the step when it strikes it. (25%)

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