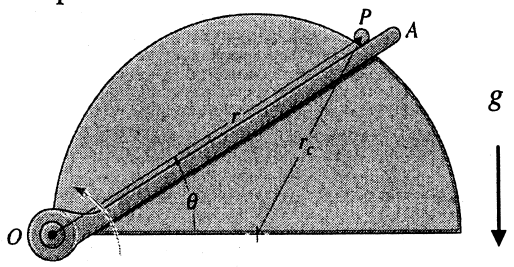
Department of Mechanical Engineering
University of California at Berkeley
ME 104 Engineering Mechanics II
Spring Semester 2007

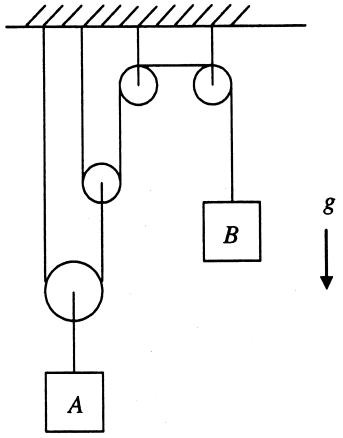
Instructor: F. Ma
Midterm Examination No. 1 Feb 23, 2007

The examination has a duration of 50 minutes.
Answer ALL questions.
All questions carry the same weight.

1. A particle of P mass m is guided along a smooth circular path of radius r_c by the rotating arm OA. If the arm has a constant angular velocity ω, determine the angle $\theta \leq 45^\circ$ at which the particle leaves the circular path.



2. The 50-kg block A shown is released from rest. If the masses of the pulleys and the cords are neglected, determine the velocity of the 20-kg block B in 3 seconds.



3. A 6-kg cylinder is released from rest in the position shown and falls onto a spring, which has been initially precompressed 50 mm by a light strap and restraining wires. If the stiffness of the spring is 4 kN/m, compute the additional deflection δ of the spring produced by the falling cylinder before it rebounds.