# ENGR230
Test 1
Winter 1999

Open textbook and notes. No other books allowed.

1. Block A (20 kg) is attached to block C (25kg) and block B (40 kg) as shown. The static friction between block A and C is 0.3. There is no friction between the ground and the blocks. The pulleys have high quality bearings so also neglect the effect of friction in the pulleys. What is the maximum force, F, that can be applied without causing slipping between blocks A and C?
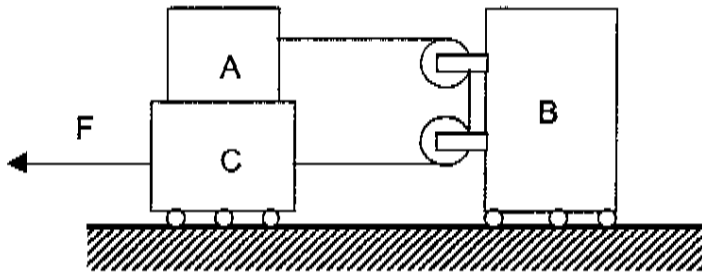
2. The flight path of airplane B is a horizontal straight line that passes directly over a radar tracking station at A. Knowing that the airplane moves to the left with constant velocity v_0, determine $d\theta/dt$ and $d^2\theta/dt^2$ in terms of v_0, h, and θ. The use of a polar coordinate system is recommended for this problem.