

Assignment #1

Reading:

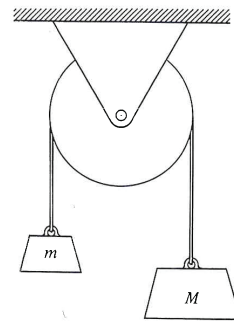
Sept 8 Kleppner & Kolenkow 2.1-2.5, 2.7-2.9

Sept 13 Kleppner & Kolenkow 1.1-1.4

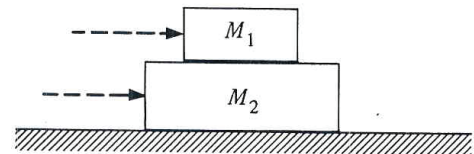
Sept 15 Kleppner & Kolenkow 1.5-1.11, 3.1-3.2

Problems:

1. Kleppner and Kolenkow 2.2
2. Kleppner and Kolenkow 2.3
3. (From Kleppner and Kolenkow, 1st edition.) The Atwood's machine shown in the drawing has a pulley of negligible mass. Find the tension T in the rope and the acceleration a of M .



4. (From Kleppner and Kolenkow, 1st edition.) A block of mass M_1 rests on a block of mass M_2 which lies on a frictionless table. The coefficient of friction between the two blocks is μ . What is the maximum horizontal force which can be applied to the blocks for them to accelerate without slipping on one another if the force is applied to (a) block 1 or (b) block 2?



5. Kleppner and Kolenkow 2.8
6. Kleppner and Kolenkow 2.9
7. Kleppner and Kolenkow 2.14

8. The monkey has mass m . The block has mass $M > m$. How long does it take the monkey to climb upward a distance h if he pulls the rope past himself at a constant rate v ? Assume that initially the monkey's velocity $v_m = 0$ (relative to the stationary pulley support).

