

Name: [5 pts]

1) Consider three masses as shown in the fig. 1, the masses m_1 and m_2 at a horizontal plane, connected over a pulley to a mass M on an inclined plane with an angle θ . Use numerical values $m_1 = 2$ kg, $m_2 = 3$ kg, $M = 5$ kg, and $\theta = \sin^{-1}(12/13)$, if you want.

- a) Say you hold the mass m_2 with a force F so that the system is at equilibrium. Find F and the tension forces of both strings. [3 pts]
- b) You let the system go. How are the accelerations of these masses related to each other? Show the acceleration vectors on the figure. [2 pts]
- c) Write down the equations of motion for each mass. [4 pts]
- d) Find the accelerations and tension forces. [3 pts]

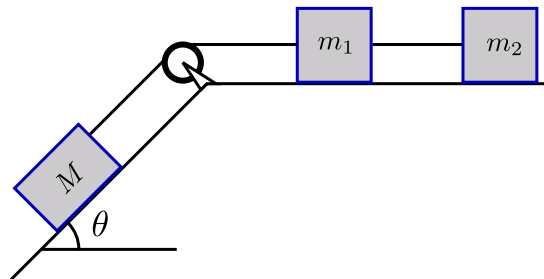


Figure 1: Three masses.