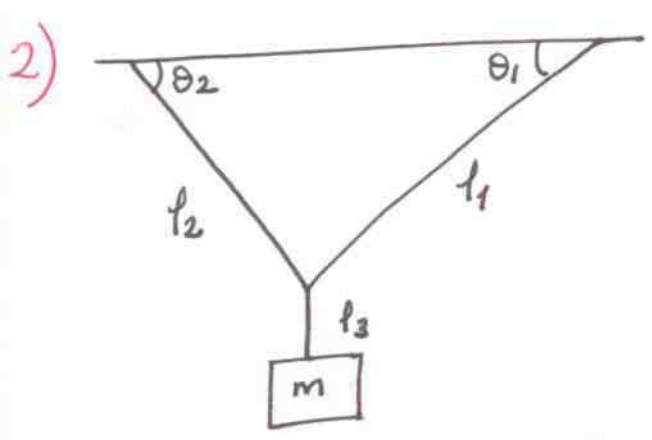
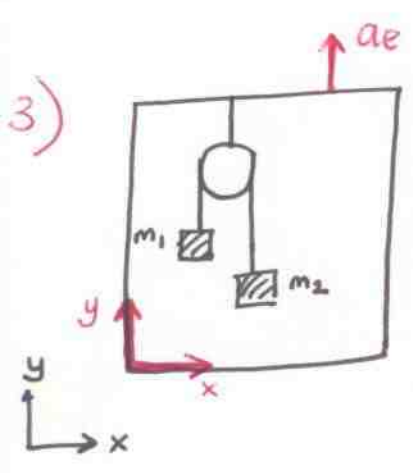


Two trains are headed toward one another along a straight way with velocities  $v_1$  and  $v_2$ . The engineer of the first train tries to reach the point A before train 2.

To make this happen, what is the condition on the acceleration of train 2?



A box is held in place by two ropes which have negligible weight. The mass of this box is  $m$ . Find the tension in each rope.  $T_1 = ?$   $T_2 = ?$   $T_3 = ?$



The system is attached to the ceiling of an elevator. When the elevator accelerates upward, find  $a_1$ ,  $a_2$  and tensions in all strings.

Using a reference frame

- i) fixed to ground
- ii) fixed to the elevator

4) How long does it take a ball to fall from a roof to the ground  $7m$  below? With what speed does it strike the ground?