## Physics 3210, Spring 2019

1. Two masses,  $M_1$  and  $M_2$  are connected by a massless string, which hangs over a pulley as shown. The mass of the pulley is negligible.  $M_1$  slides on a frictionless ramp making an angle  $\theta$  with respect to the horizontal, and  $M_2$  hangs from the string. Compute the acceleration of the masses as a function of  $M_1$ ,  $M_2$ ,  $\theta$  and g. Be sure to specify your sign conventions so we can tell whether *e.g.*  $M_2$  is moving up or down.

Find the relationship between  $M_1$  and  $M_2$  such that if the blocks are released from rest, they remain at rest.

