Worksheet 3.3 Inclines (part 2)

1) Two blocks are tied together with a string as shown.

If both the pulley and incline are frictionless find

a) the direction and magnitude of acceleration on the 1.0 kg mass.  
   (4.9 m/s² up the ramp)

b) the tension in the string joining the blocks.  
   (9.8 N)

2) If the ramp and block in question 1 have a coefficient of friction of 0.135, what will be the block’s acceleration?  
   (4.5 m/s²)

3) Do questions 1 and 2 if m₂ = 6.0 kg instead.
   (1.2 m/s² down the ramp)  (22 N)
   (0.37 m/s² down the ramp)

4) Using the diagram below, calculate the acceleration of the masses and the tension in the rope.
   (0.60 m/s² to the left)  (5.5 N)

5) Consider the diagram below. If the coefficient of friction between the ramps is 0.111, find the acceleration and the tension in the ropes.
   (3.6 m/s² to the right)  (9.5 N)