Daily Question – Applied Mathematics - Day 10

Topic: Mechanics – Connected particles

Two particles A and B, of masses 2.8 kg and 1.6 kg respectively, are connected by a light inextensible string, which is taut. Particle A lies on a rough horizontal table, 2 m from a small smooth pulley fixed at the edge. The string passes over the pulley and B hangs freely, 0.7 m above ground. A frictional force of magnitude $0.5g$ N opposes the motion of particle A.

The system is released from rest. Find:

a the acceleration of the system **(3 marks)**

b the time taken for B to reach the ground **(4 marks)**

c the total distance travelled by A before it first comes to rest. **(7 marks)**