4 Incline plane

An object of mass 3kg is released from rest on an incline plane from a vertical height of 15 meters above the ground.

a) What is its velocity at the bottom of the plane?

b) If, instead of being released from rest, the object is given an initial velocity of 2 m/s up along the incline plane, what is its velocity at the bottom of the plane?

c) If, instead of being released from rest, the object is given an initial velocity of 2 m/s down along the incline plane, what is its velocity at the bottom of the plane?

If the object is released from rest and there is now friction between the plane and the object (μ, = 0.6, and μk = 0.2).

d) What is its velocity at the bottom of the plane?

If the object is released from rest and there is still friction between the plane and the object (μ, = 0.6, and μk = 0.2) but this time, it is released from a distance of 15m from the bottom of the plane along the surface.

e) What is its velocity at the bottom of the plane?

If the object is released from rest and there is now friction between the plane and the object (μ, = 0.6, and μk = 0.2) but this time, it is released from a distance of 15m from the bottom of the plane along the surface.