6 A particle A of mass 2.5 kg is released from rest from the top of a smooth plane, which makes an angle of $\sin^{-1} 0.2$ with the horizontal. The particle A collides 2 seconds later with a particle B, of mass 3 kg, which is moving up a line of greatest slope of the plane. The speed of B immediately before the collision is $3.5\,\mathrm{m\,s^{-1}}$. Immediately after the collision, B has a velocity of $0.5\,\mathrm{m\,s^{-1}}$ down the plane.

Find the distance A moves up the plane after the collision. [6]