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8. Particles A, B and C, of masses $2m$, m and $3m$ respectively, lie at rest in a straight line on a smooth horizontal plane with B between A and C. Particle A is projected towards particle B with speed $2u$ and collides directly with B.

The coefficient of restitution between each pair of particles is e.

(a) (i) Show that the speed of B immediately after the collision with A is $\frac{4}{3}u(1 + e)$

(ii) Find the speed of A immediately after the collision with B.

(7)

At the instant when A collides with B, particle C is projected with speed u towards B so that B and C collide directly.

(b) Show that there will be a second collision between A and B.

(6)

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