



Two uniform smooth spheres A and B of equal radii each have mass m . The two spheres are each moving with speed u on a horizontal surface when they collide. Immediately before the collision A 's direction of motion makes an angle of α° with the line of centres, and B 's direction of motion is perpendicular to that of A (see diagram). The coefficient of restitution between the spheres is e .

Immediately after the collision, B moves in a direction at right angles to the line of centres.

(a) Show that $\tan \alpha = \frac{1+e}{1-e}$. [4]

(b) Given that $\tan \alpha = 2$, find the speed of A after the collision. [4]