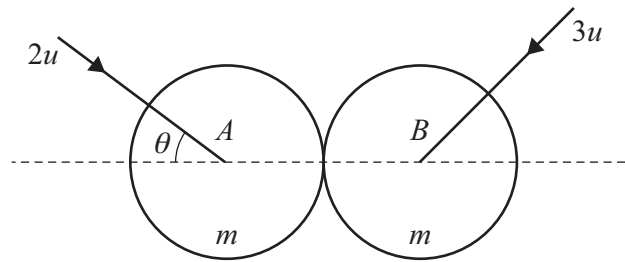




3



The diagram shows two identical smooth uniform spheres A and B of equal radii and each of mass m . The two spheres are moving on a smooth horizontal surface when they collide with speeds $2u$ and $3u$ respectively. Immediately before the collision, A 's direction of motion makes an angle θ with the line of centres and B 's direction of motion is perpendicular to that of A . After the collision, B moves perpendicular to the line of centres. The coefficient of restitution between the spheres is $\frac{1}{3}$.

- (a) Find the value of $\tan \theta$. [3]

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



(b) Find the total loss of kinetic energy as a result of the collision.

[2]

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(c) Find, in degrees, the angle through which the direction of motion of A is deflected as a result of the collision.

[2]

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