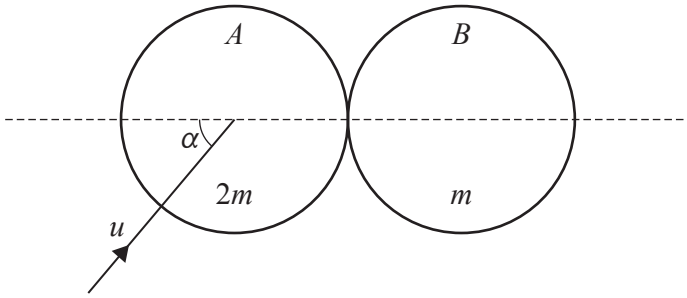
**2**




Two uniform smooth spheres $A$ and $B$ of equal radii have masses $2m$ and $m$ respectively. Sphere $B$ is at rest on a smooth horizontal surface. Sphere $A$ is moving on the surface with speed $u$ and collides with $B$. Immediately before the collision, the direction of motion of $A$ makes an angle $\alpha$ with the line of centres of the spheres, where $\tan\alpha = \frac{4}{3}$ (see diagram). The coefficient of restitution between the spheres is $\frac{1}{3}$.

Find the speed of $A$ after the collision. [5]