



Two smooth uniform spheres A and B of equal radii have masses m and $5m$ respectively. Sphere A is moving on a smooth horizontal surface with speed u when it collides with sphere B which is at rest on the surface. Immediately before the collision, A 's direction of motion makes an angle of θ with the line of centres. After the collision, the kinetic energies of A and B are equal. The coefficient of restitution between the spheres is $\frac{1}{2}$.

Find the value of $\tan \theta$.

[6]