



STEP III, 2000 Q10

- 10 A sphere of radius a and weight W rests on horizontal ground. A thin uniform beam of weight $3\sqrt{3}W$ and length $2a$ is freely hinged to the ground at X , which is a distance $\sqrt{3}a$ from the point of contact of the sphere with the ground. The beam rests on the sphere, lying in the same vertical plane as the centre of the sphere. The coefficients of friction between the beam and the sphere and between the sphere and the ground are μ_1 and μ_2 respectively.

Given that the sphere is on the point of slipping at its contacts with both the ground and the beam, find the values of μ_1 and μ_2 .



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