

A light inextensible string of length a is threaded through a fixed smooth ring R. One end of the string is attached to a particle A of mass B. The other end of the string is attached to a particle B of mass B. The particle B hangs in equilibrium at a distance B vertically below the ring. The angle between B and B is B (see diagram). The particle B moves in a horizontal circle with constant angular speed B is B (see diagram).

Show that $\cos \theta = \frac{1}{3}$ and find x in terms of a.	[5]

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