The points A and B are at the same horizontal level a distance $4a$ apart. The ends of a light elastic string, of natural length $4a$ and modulus of elasticity λ, are attached to A and B. A particle P of mass m is attached to the midpoint of the string. The system is in equilibrium with P at a distance $\frac{3}{2}a$ below M, the midpoint of AB.

(a) Find λ in terms of m and g. [3]

The particle P is pulled down vertically and released from rest at a distance $\frac{8}{3}a$ below M.

(b) Find, in terms of a and g, the speed of P as it passes through M in the subsequent motion. [4]