1. A particle P of mass 0.5 kg moves along the positive x-axis under the action of a single force of magnitude F newtons.

The force acts along the x-axis in the direction of x increasing.

When P is x metres from the origin O, it is moving away from O with

speed $\sqrt{\left(8x^{\frac{3}{2}} - 4\right)}$ m s^{-1}

Find F when P is 4 m from O.

(5)

(Total for Question 1 is 5 marks)