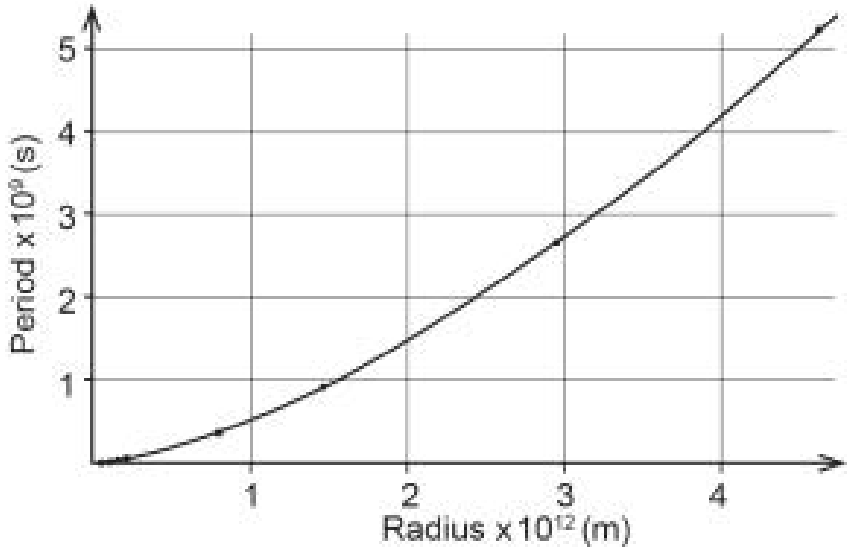
Question 17 **(10 marks)**

A satellite is orbiting the Earth 4.00×10^3 km above its surface.

(a) Calculate the period of the satellite. (5 marks)

_____ hours



The graph shows the relationship between the period (T) and the orbiting radius (r) of all the planets in our solar system.

(b) (i) With reference to Kepler's Third Law, describe how a straight line graph could be generated using the same two variables. (Do not refer to logarithms.) (2 marks)

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(ii) Explain how you could use the gradient of this straight line and Kepler's Third Law to estimate the magnitude of the Newtonian constant of gravitation (G).
(Do not try to calculate G from the graph.) (3 marks)