

- 8** The engine of a boat supplies a constant power of 110 kW to propel the boat forward. The boat attains a maximum speed of  $21.0 \text{ m s}^{-1}$ .

If the magnitude of the resistive force acting on the boat is proportional to the square of the boat's speed, what is the resultant force acting on the boat when it is moving at the instant when its speed is  $15.0 \text{ m s}^{-1}$ ?

- A** 2.7 kN                      **B** 3.6 kN                      **C** 4.7 kN                      **D** 7.3 kN

- 9** An astronomical gas cloud has mass  $M$  and radius  $R$ . The gravitational potential on its surface  $S$