

6. We note that the mean density and mean radius for the Sun are given in Appendix C. Since $\rho = M/V$ where $V \propto r^3$, we get $r \propto \rho^{-1/3}$. Thus, the new radius would be

$$r = R_s \left(\frac{\rho_s}{\rho} \right)^{1/3} = (6.96 \times 10^8 \text{ m}) \left(\frac{1410 \text{ kg/m}^3}{2 \times 10^{17} \text{ kg/m}^3} \right)^{1/3} = 1.3 \times 10^4 \text{ m} .$$