1. **Carroll & Ostlie, Problem 9.7**: Calculate how far you could see through Earth's atmosphere if it had the opacity of the solar photosphere. Use the value for the Sun's opacity from Example 9.2.2 (0.3 $\text{cm}^2 \text{ gm}^{-1}$, from page 242) and 1.2×10^{-3} gm cm^{-3} for the density of the Earth's atmosphere. (3 pts)

2. **Carroll & Ostlie, Problem 9.11**: According to a "standard model" of the Sun, the central density is 153 gm cm^{-3} and the Rosseland mean opacity at the center is 2.17 $\text{cm}^2 \text{ gm}^{-1}$.

   (a) Calculate the mean free path of a photon at the center of the Sun. (2 pts)

   (b) If this mean free path remained constant for the photon's journey to the surface, calculate the average time it would take for the photon to escape the Sun. (5 pts)