2. Assume a population of cloud droplets follows the gamma distribution with 
  \( a = 4.53 \times 10^{-24} \text{ m}^{-6} \) and \( b = 2.35 \times 10^{5} \text{ m}^{-1} \).

a. What is the number density of the droplets (in cm\(^{-3}\))?
   
   **Answer:** \( 698 \text{ cm}^{-3} \)

b. What is the liquid water content of the cloud (in g/m\(^3\))?  
   **Answer:** \( 1.69 \text{ g/m}^3 \)

c. What is the surface area density of the drops (in cm\(^2\)/m\(^3\)) (i.e., what is the total surface area of all the drops contained in a cubic meter of air?) 
   **Answer:** \( 4770 \text{ cm}^2/\text{m}^3 \)

d. What is the mean drop diameter (in \( \mu \text{m} \))?
   **Answer:** \( 12.8 \mu \text{m} \)

e. What is the mean distance between drops (in mm).
   **Answer:** \( 0.624 \text{ mm} \)