CHEM 1154 BONUS QUESTION

You are given a mylar balloon filled with helium which has a total mass of 5.0000 g. The volume of the balloon is 5.00 L. Assume the temperature remains constant at 20°C and that the volume of the balloon remains constant.

Your mission is to calculate how high in the atmosphere the balloon will rise. Assume the molar mass of air to be 28.8 g. You will need to use the barometric equation to calculate the pressure at different altitudes (H):

ln(1 bar/P) = MGH/RT

Where M = molar mass of air
G = gravitational constant
H = height above sea level
T = temperature in Kelvin
R = universal gas constant = 8.314 Joule/mol·K