Answer on Question #63927 - Chemistry – General Chemistry

What is the final volume, when 54.8 mL of a gas is heated from 61.5°C to 25.5°C?

Solution.

$pV = nRT$

We assume an isobaric process (constant pressure) and a constant amount of substance. Get n, R, and p onto one side and T and V onto the other

$V/T = nR/p = $ constant $\Longrightarrow V_1/T_1 = V_2/T_2$

$V_2 = V_1 \times T_2/T_1$

$V_2 = 54.8$ mL $\times ((273+25.5$ K$) / (273+61.5$ K$)) = 48.9$ mL

Answer: $V_2 = 48.9$ mL