1. An isothermal process is one in which $T_i = T_f$ which implies $\ln(T_f/T_i) = 0$. Therefore, with $V_f/V_i = 2$, Eq. 21-4 leads to

$$\Delta S = nR \ln\left(\frac{V_f}{V_i}\right) = (2.50\,\text{mol})\left(8.31\,\frac{\text{J}}{\text{mol}\cdot\text{K}}\right)\ln(2) = 14.4\ \text{J/K}\ .$$