Quiz 12

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(a) Consider the case of a van der Waals gas whose internal energy per particle is given by

$$u(s, v) = -\frac{a}{v} + (v - b)^{-1/c} \exp\left(\frac{s - s_0}{cR}\right). \tag{1}$$

Use this to find $T(s, v)$. [5]

(b) You are given that the Helmholtz free energy per particle is $f(T, v) = u - Ts$. Find f for the van der Waals gas using the expressions in the previous part.   [5]