Physics 214B - Exam 2 - Winter 1998

Consider a microcanonical ensemble with particles interacting by the same type of potential as discusses in class, namely $v(r) = 0$ for $r > R_0$ and $\sum_{i \neq j} v(r_i - r_j) > -N u_0$

(i) Show that in the limit $N, V, E \to \infty$, with ratios fixed the entropy per particle approches a finite value.

(ii) Show that the temperature, T, is positive (easy) and that

$$\left(\frac{\partial T}{\partial E} \right)_{N,V} \geq 0$$

(not so easy).