PHY831: Stat-Mech Chapter 2: 2.1-2.2, Baez & Yandow November 28, 2017

Important Equations:
Generalized Equipartition Theorem: $\langle q\frac{\partial H}{\partial q}\rangle = T$
Virial Theorem: $\langle q_i\frac{\partial H}{\partial q_i}\rangle = \langle p_i\frac{\partial H}{\partial p_i}\rangle$

Name:_____

1. Using the virial theorem and the non-generalized equipartion theorem, show that for a nonrelativistic particle moving in a three-dimensional potential,

$$V(r) = Kr^N \tag{1}$$

The average potential energy is

$$\langle V(x)\rangle = \frac{3T}{N} \tag{2}$$