Physics 831 Quiz #2 - Friday, Sep. 14

1. Consider a massless one-dimensional gas of bosons with spin degeneracy N_s. Assuming zero chemical potential, find the coefficients A and B for the expressions for the pressure and energy density,

$$P = AN_sT^2, \qquad \left(\frac{E}{V}\right) = BN_sT^2$$

   Feel free to set $c = 1$.

2. Show that if the previous problem is repeated for Fermions that:

$$A_{Fermions} = \gamma A_{Bosons}, \quad B_{Fermions} = \gamma B_{Bosons},$$

   and find the constant γ.