The number of states is expressed as a function of various parameters for three systems below. For each, find an “equation of state” which gives the relationship between *p*, *V*, *N*, and *T*.

(*C* and *b* are constants.)

1. $Ω=Ce^{bNV^{2}}\left(EV\right)^{N} ,$
2. $Ω= \frac{π}{2} \left(\frac{2}{h}\right)^{3N}V^{N/2}e^{bNV}E^{2N} ,$
3. $Ω= Ce^{(\frac{-b}{ V^{10}})}E^{3N}$*.*