Homework 12

Please think over the following problems:

1. 1kg of nitrogen expanded adiabatically and performed work of 300J. Find the change of the internal energy of the gas and the change of the gas temperature. c_V of nitrogen is 745J/kg^{o}K. (Just to remind: "adiabatically" means that the gas was thermally isolated from the environment and $\Delta Q=0$).

2. Gas with m=1kg, p=2x10^{5}N/m2 and c_V=700 J/kg^{o}K was heated and expanded due to the heating. What is the specific heat of the gas in this process if its temperature increased by 2% and increase of its volume was 0.001m^3 (We assume that the gas has high volume and temperature so its pressure can be considered as constant).

   Hint: To find heat capacitance c you should remember what it is. It was introduced as: $\Delta Q = cm\Delta T$. *So if you find* ΔQ *and* ΔT *you can find* c.