1 Gibbs free energy

The Gibbs free energy, G, is given by

$$G = U + pV - TS.$$

(a) Find the total differential of G. As always, show your work.

(b) Interpret the coefficients of the total differential dG in order to find a derivative expression for the entropy S.

(c) From the total differential dG, obtain a different thermodynamic derivative that is equal to

$$\left(\frac{\partial S}{\partial p}\right)_T$$