

## 1 Ideal gas in two dimensions

- (a) Find the chemical potential of an ideal monatomic gas in two dimensions, with  $N$  atoms confined to a square of area  $A = L^2$ . The spin is zero.
- (b) Find an expression for the energy  $U$  of the gas.
- (c) Find an expression for the entropy  $\sigma$ . The temperature is  $kT$ .