SHEET 3.

Exercise 1

$\Lambda \subset\subset \mathbb{Z}^d$ $\quad \omega \in \{-1,+1\}^{\partial\Lambda}$ b.c. $, \beta \geq 0$

What is $\lim\limits_{h\to\infty} \langle \sigma_0 \rangle^{\omega}_{\Lambda,h}$?

Exercise 2

Let $\Lambda \subset\subset \mathbb{Z}^d$. $\quad \omega \leq \omega'$ b.c. for Λ.

Prove that $\forall A \subset \Lambda$

$$\langle n_A \rangle^{\omega'}_{\Lambda} - \langle n_A \rangle^{\omega}_{\Lambda} \leq \sum_{x\in A} \langle n_x \rangle^{\omega'}_{\Lambda} - \langle n_x \rangle^{\omega}_{\Lambda}$$

Deduce that if we assume $\omega \neq \omega'$, then

$$\exists x \in \Lambda : \quad \langle \sigma_x \rangle^{\omega'}_{\Lambda} > \langle \sigma_x \rangle^{\omega}_{\Lambda}$$