**PHYSICS 230 : ADVANCED SOLID STATE PHYSICS**
**HW ASSIGNMENT #2**

**(1)** For the $p_x + ip_y$ superconductor model discussed in §1.7.3 of the lecture notes, find the Chern numbers $C_\pm$ for $m \in [-4t, 0]$. What happens as $m$ crosses $m = 0$?

**(2)** Verify that for $b$ quantum resistors in series that $\langle T' \rangle = b \langle \ln T \rangle$ (Eqn. 2.96 of the Lecture Notes), where $T$ is the transmission coefficient for a single scatterer.

**(3)** Verify the expression for $\bar{f}(\mathbf{k})$ in Eqn. 3.196 of the lecture notes.