FORMALISM PROBLEM 13

Prove the following properties of the Dirac delta function using its definition:

a) $\delta(-x) = \delta(x)$, i.e., it is an even function.

b) $\delta(ax) = \dfrac{1}{|a|}\delta(x)$

c) $x\,\delta(x) = 0$

d) $x\,\delta'(x) = -\delta(x)$.