1. Show that $(L^1, ||\cdot||_1)$ is a normed vector space. Remember that L^1 consists of equivalence classes so that is why $||f||_1$ is 0 only when f is 0 in the sense that it is in the same equivalence class as 0.

2. Show that for $\vec{a}, \vec{b} \in l^2(\mathbb{R})$ the function $< \vec{a}, \vec{b} >= \sum_{k=1}^{\infty} a_k b_k$ is an inner product.

3. Show that for $f, g \in L^2([a, b])$ the function $< f, g >= \int_a^b fg$ is an inner product.