

Hint/Correction for Problem Set 1

3.5.1 We first need to make one more assumption (which was not included in the printed version but should have been) that

$$\int \dot{\ell}_{\tilde{\theta}} \dot{\ell}'_{\tilde{\theta}} p_{\tilde{\theta}} d\mu \rightarrow \int \dot{\ell}_{\theta} \dot{\ell}'_{\theta} p_{\theta} d\mu, \text{ as } \|\tilde{\theta} - \theta\| \rightarrow 0. \quad (1)$$

Now use (1) to show that

$$H(\tilde{\theta}, \theta) \equiv \int \left(p_{\tilde{\theta}}^{1/2} - p_{\theta}^{1/2} \right)^2 d\mu \rightarrow 0, \text{ as } \|\tilde{\theta} - \theta\| \rightarrow 0. \quad (2)$$

Next, show that (2) implies

$$\int |p_{\tilde{\theta}} - p_{\theta}| d\mu \rightarrow 0, \text{ as } \|\tilde{\theta} - \theta\| \rightarrow 0. \quad (3)$$

Finally, fill in the remaining steps to complete the problem (this is somewhat involved).