

1. Read Seiden Ch 1
Read A&H Ch 1
2. Seiden, Probs 1.2, 1.4, 1.6, 1.7
3. State one interesting fact you learned from the *Review of Particle Physics* this week. (Tell me something you didn't know before, and something different from the other students.)
4. Demonstrate that ∂_μ transforms in the same way as $x_\mu \equiv g_{\mu\nu}x^\nu$ (in a few lines, using the general properties of $\Lambda^{\mu'}_\nu$).
5. Show that the time ordering between two timelike separated events is preserved under proper Lorentz transformations. (Proper includes rotations and boosts, but not parity or time reversal.) It may help to first show that $\Lambda^{0'}_0 \geq 1$.
6. Show that the antisymmetric tensor $\epsilon_{\mu\nu\alpha\beta}$ is invariant under proper Lorentz transformations. Use this to show that d^4x is a scalar.