EE 6315 Engineering Optics
Professor Duncan MacFarlane
Homework Set 1
Due Saturday, September 29, 2012

Problem 1 (5 points). In words, pictures and equations discuss the Eikonal Equation and its implications in ray optics.

$$|\nabla \mathcal{S}(\mathrm{r})|^2 = n^2(r)$$

Problem 2 (5 points). Using ray matrices derive the overall "round trip" matrix for a laser cavity comprising 2 spherical mirrors (curvatures R1 and R2) separated by a distance d. Under what conditions is this cavity "stable" in the Kogelnik and Li sense?