Problem Set 5 – Signaling Games

1. Solve Mas-Colell, Whinston & Green 13.C.1.

2. Solve Mas-Colell, Whinston & Green 13.C.5. (Hint: the answer t0 part b is *no*; to prove non-existence of a separating PBE you should use the fact that $c_H > c_L$.)

3. Consider the signaling model with two types of workers presented in Mas-Colell *et al*, section 13.C. Assume that $\theta_L = 1$ and $\theta_H = 4$. Workers can acquire education before entering the labour market; education does not change workers' productivity. Let the cost function for education be: $c(e, \theta) = e^2/(3\theta)$. The utility of a worker of type θ is then given by: $u(w, e \mid \theta) = w - e^2/(3\theta)$.
   i) Find the lowest and highest possible levels of education chosen by the types-H in a separating PBE.
   ii) Let $\lambda \in (0, 1)$ denote the fraction of types-H in the economy. For which values of λ might the types-H be better-off when they can use schooling to signal their intrinsic ability?

4. Consider again the signaling model with two types of workers presented in Mas-Colell *et al*, section 13.C. Let $\widetilde{e}$ denote the lowest possible level of education chosen by the types-H in a separating PBE. Show that in any separating PBE it must necessarily be the case that $\mu(e) < 1$ for all $e < \widetilde{e}$. (Hint: solve graphically.)