Economics 326: Suggested Solutions to Midterm 2

8 March, 2006

Question 1

(a) In the separating equilibrium, $e^*(10) = e_1$. The high type needs to obtain enough education to separate themselves, so $e^*(20) = e_3$. Wages are as follows: $w(e_1) = 10$, $w(e_3) = 20$ and $w(e_2) \leq 16$.

(b) There is one pooling equilibrium, where $e^* = e_1$. Wages are as follows: $w(e_1) = 15$, $w(e_2) \leq 19$ and $w(e_3) \leq 20$. Notice there cannot be a pooling equilibrium with more education, since the low type would deviate.

Question 2

(a) Suppose all three hide. Then the price equals $p = 23.3$ and the highest type will reveal. Suppose the low and middle types hide, then the price equals 15, and the middle type will reveal.

(b) There are two equilibria. In the first, the low and middle types hide. The middle type will not reveal since the price will only rise by 5, while the cost of revelation is 8. In the second equilibrium, only the low types hide. The middle types will not hide, since the price will fall by 10 and they will save the cost of 8.

Question 3

(a) Clearly $c(0, \theta) = 0$ and $c(e, \theta)$ is increasing in e. The cross–partial is $c_{e\theta}(e, \theta) = -(1/2)e^{-1/2}\theta^{-2}$, which is negative.

(b) $e_L = 0$, while e_H is given by the indifference condition

$$\theta_L - \frac{0}{\theta_L} = \theta_H - \frac{\sqrt{e_H}}{\theta_L}$$

Rearranging, $e_H = (\theta_H - \theta_L)^2\theta_L^2$.

(c) $e_L = 0$ and $e_H = (\theta_H - \theta_L)^2\theta_H^2$.

(d) $e_L = e_H = 0$.

(e) $e_L = e_H = (E[\theta] - \theta_L)^2\theta_L^2$