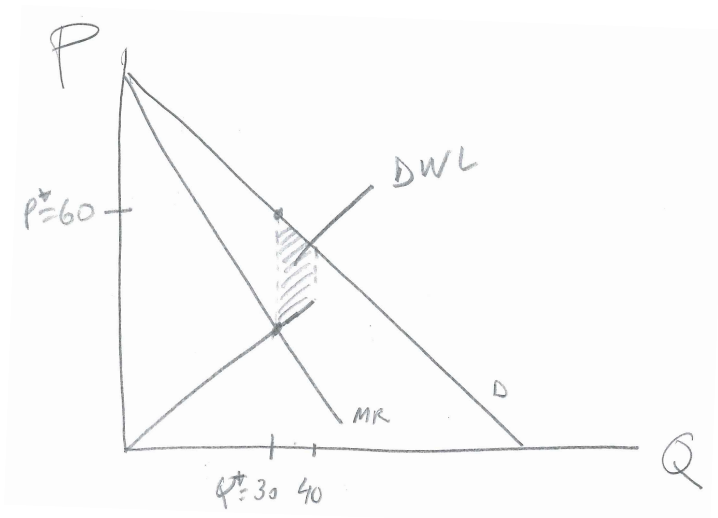
EC3322
Industrial Organization I
Semester 1, 2015-2016
Tutorial #9

SOLUTIONS

1. b

2. (a) $Q^* = 30, P^* = 60$

   (b) The efficient quantity is 40 and $DWL = 200$



3. (a) $p_1^* = 5, p_2^* = 5.$

   (b) With $MC = 3$, firm 1 can charge a price of $p_1 = 5 - \epsilon$, earning profits of approximately $\pi_1 = (5 - 3) \times 10,000 = 20,000$. Therefore, firm 1 is willing to pay up to 20,000 for the new technology.

4. Scenario 1: $\pi^D < \dfrac{100}{1-\delta} = 200$, scenario 2: $\pi^D + \delta\pi^D > \dfrac{100}{1-\delta} = 200 \Rightarrow \pi^D > \dfrac{400}{3}$. Therefore, $\dfrac{400}{3} < \pi^D < 200$.

5. (a) $p_1^* = 4, p_2^* = 2,$

   (b) $p_1^* = 6, p_2^* = 2.5,$

   (c) $p_1^L = 4$

(d) This was trickier than I had intended. The complication is that we do not know the demand for firm 1's product if firm 2 does not enter. (The demand functions given in the problem are the demand functions given that both firms are active.) Consider the limit price and firm 2's best response (which leaves firm 2 indifferent about entering): $p_1 = 4, p_2 = 2$, which provides firm 1 with $q_1 = 4$ and $\pi_1 = 16$. Now assume that firm 2 does not actually enter. As long as firm 1 sells at least one more unit at \$4, presumably a unit that someone would have purchased from firm 2, firm 1 earns $\pi_1 > 18$, the profit under accommodation, and firm 1 will choose to deter entry. (This interpretation arose during one of the tutorials. Thanks to the participants for their input.)