Midterm, Econ 155, 4 May 2000

1. True. If you value individual rights, you would be opposed to culling an overcrowded deer herd, something you would favor in you believed in sustainability.
2. True. Both guys are better off at B
3. False. Although the amount of utility suggests Bob could bribe Bill to move to C, utilities are noncomparable. If Bill is Bill Gates, Bob probably doesn't have enough money to make up for Bill's loss in moving from A to C.
4. True. For many choices, the oligarchy will not be unanimous -- some will prefer, some not.
5. False. MRT only applies with production.
6. False. The First Theorem says that a competitive equilbrium is Pareto Optimal
7. False. Technology can make a good excludable. The open range in the 19th century is an example -- barbed wire made it excludable.
8. True. The sum of individual marginal willingesses to pay yields the aggregate.
9. False. A pecuniary externality involves a price change brought about by some action.
10. False. Bargaining costs are a transaction cost.
11. True. That is the definition.
12. False. This should hold for all polluters.
13. True. Average costs are lowered, which lowers product price which increases amount sold.
14. True. Positive theories seek to explain why we have what we have and introducing political pressure into the model helps explain current regulatins.
15. True. Any positive price could very well exclude people whose marginal value is in excess of the marginal cost of providing the good (zero).
16. True. It is difficult to make sure that a variety of different command-and-control rules applied to different industries all involve the same marginal pollution control cost.
17. False. If the victim can take action to change the exposure to the externality (such as moving closer or further from a noisy airport), then they should not be encouraged to change their behavior by the payment of compensation.
18. False. A dominant firm can manipulate the permit price, and the extent of manipulation depends on the intial distribution of permits.
19. True. The authors say that markets will not always work.
20. True. In his own model of growth, the utility of a representative individual is non-decreasing over time.

21. $U_R = (W_R - W_G) C_R$
$U_G = W_G C_G$
$W_R + W_G = 10$
$C_G + C_R = 5$

(a) $\frac{\partial U_R}{\partial W_R} = C_R \quad \frac{\partial U_R}{\partial C_R} = (W_R - W_G) \Rightarrow MRS = \frac{C_R}{W_R - W_G}$

$\frac{\partial U_G}{\partial W_G} = C_G \quad \frac{\partial U_G}{\partial C_G} = W_G \Rightarrow MRS = \frac{C_G}{W_G}$

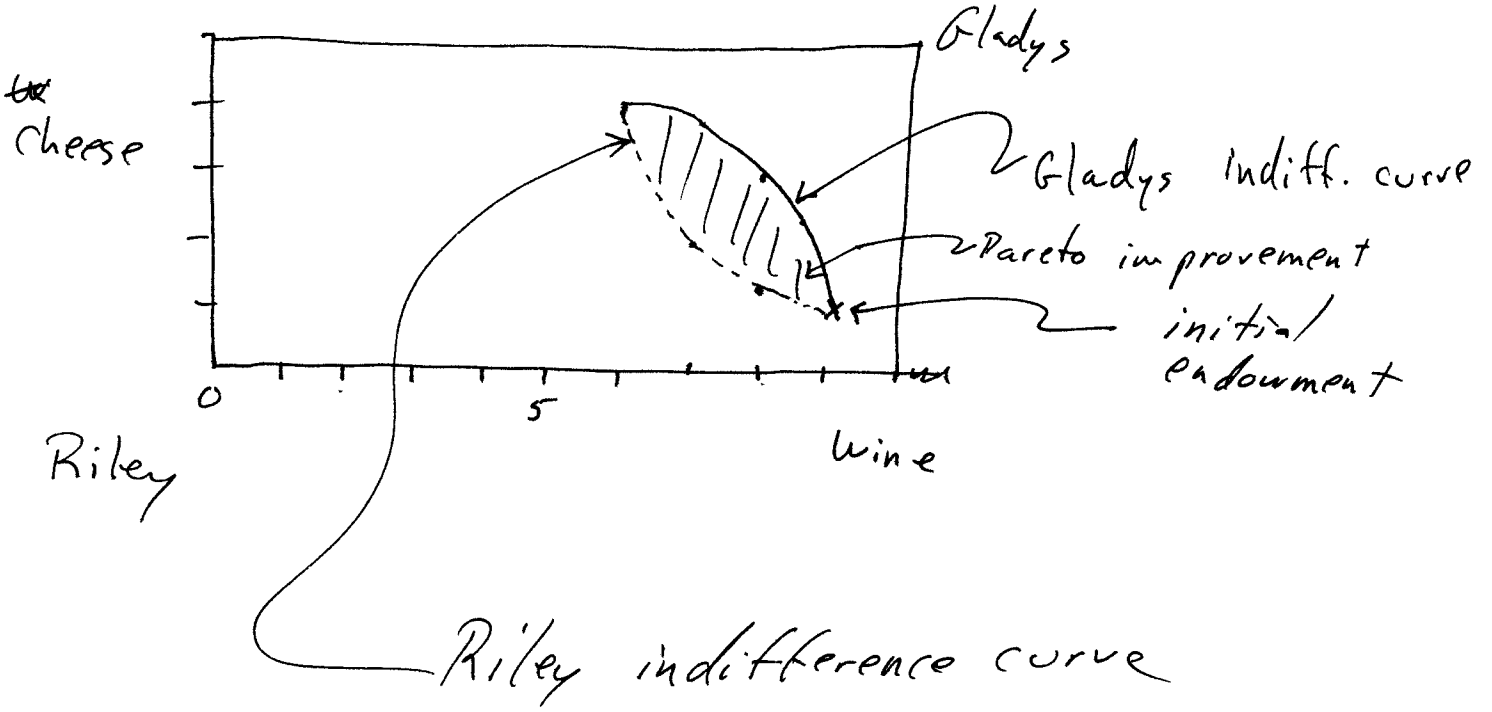
(b) $U_R = (W_R - (10 - W_R)) C_R = (2W_R - 10) C_R$
$U_G = W_G C_G$

$\frac{\partial U_R}{\partial W_R} = 2C_R \quad \frac{\partial U_R}{\partial C_R} = 2W_R - 10 \Rightarrow MRS = \frac{2C_R}{2W_R - 10}$

MRS for Gladys unchanged

(c) Because there is an externality for Riley. in part (a) which comes under his control in part (b), the MRS's are different. For Gladys there is no consumption externality

(d) Riley: $U_R = (2w_R - 10)c_R = 8$ (initially)
Gladys: $U_G = w_G c_G = 4$ (initially)



(e) see above

(f) Check MRS in part (b)

$MRS_R = \frac{2 \cdot 3}{2 \cdot 8 - 10} = \frac{6}{6} = 1$

$MRS_G = \frac{2}{2} = 1$ YES

22 (a) Damage $= D(d) = d^2/2$

But $d = e_M + 2e_N$ where e_M and e_N are emissions in N and M

$e_M = 3 - k_M$ where k_M and k_N are amounts controlled in N & M

$e_N = 5 - k_N$

$\Rightarrow$ damage $= (e_M + 2e_N)^2/2$

$= (3 - k_M + 2(5 - k_N))^2/2$

$= (13 - k_M - 2k_N)^2/2$

(b) Total costs = damage + control costs

$TC = (13 - k_M - 2k_N)^2/2 + k_M^2/2 + k_N^2/2$

(c) $\frac{\partial TC}{\partial k_M} = (13 - k_M - 2k_N)(-1) + k_M = 0$

$\Rightarrow 13 - 2k_M - 2k_N = 0$

$\frac{\partial TC}{\partial k_N} = (13 - k_M - 2k_N)(-2) + k_N = 0$

$\Rightarrow 26 - 2k_M - 5k_N = 0$

Solve $\left.\begin{array}{l} 2k_M + 5k_N = 26 \\ 2k_M + 2k_N = 13 \end{array}\right\}$ $3k_N = 13 \Rightarrow k_N = 4\frac{1}{3}$

$\Rightarrow k_M = 2\frac{1}{6}$

(d) $MC = 2k$ $\Rightarrow t_N = 4\frac{1}{2}$ & $t_M = 2\frac{1}{6}$