

Problem Set #1

1. (PT, chap. 2, probl. 1) Assume that there are 3 individuals (1, 2, 3) who vote over three alternatives (A , B , and C) in a pairwise majority vote.

(a) Assume that each individual votes sincerely and preferences are:

	1	2	3
1 st	A	B	C
2 nd	C	A	B
3 rd	B	C	A

Does there exist a Condorcet winner?

- (b) Suppose preferences are the same as in (a) and 1 is the agenda-setter. Which order of voting is optimal for him/her? Given the optimal order of voting, does 3 have an incentive to vote strategically if 1 and 2 continue to vote sincerely?
- (c) Suppose 2's preferences are $B \succ A \succ C$. Construct preferences for 1 and 3 so that they satisfy the single-peakedness condition. Which alternative is the Condorcet winner?
2. (PT, chap. 2, probl. 2) Consider a society inhabited by a continuum of citizens. The size of the population is normalized to unity. Individual i 's preferences over a publicly provided good y and a privately provided good c^i are

$$u^i = c^i + \alpha^i V(y),$$

where $V(\cdot)$ is a concave, well-behaved function and α^i is an intrinsic parameter of agent i distributed according to $F(\cdot)$ with mean α . Assume that all individuals have initial resources in private good $e^i = 1$ for all i . Suppose also that one unit of private good is required to produce one unit of public good. Last, to finance the production of the public good, the government raises a tax q on each individual so that agent i 's budget constraint is $c^i \leq 1 - q$.

- (a) What is the (utilitarian) social optimum in this economy?
- (b) Compute each individual's policy preferences. What is the preferred policy $q(\alpha^i)$ of agent i ?
- (c) Under majority rule, what is the selected policy? Compare this to the social optimum. When does the social optimum coincide with the equilibrium policy?