

POLS 509, Homework # 1

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1 The Setting

For this exercise, suppose that the distribution of voter preferences in a hypothetical political district over a range of ideology X in $[-1, 1]$ (running from most liberal on the left to most conservative on the right) is defined by the function $P = -4X^4 - 1.5X^3 + 3X^2 + 4$. Suppose further that all voters with $P > 0$ are members of the **R**ight party, while those with $P \leq 0$ make up the **L**eft party.

2 Problems

1. Provide a sketch of this function over the range in question.
2. Two political candidates of opposing parties must run in closed primary elections, in which the voters of each party choose the candidate to run in the general election. If the optimal strategy for each primary candidate is to position herself at the point where the **maximum** number of voters in her party are located, what ideological positions should the candidates stake out in the primaries? (You need to give two answers, one for each party.)
3. Once the primaries are over, the Median Voter Theorem suggests that the candidates should move towards the position of the median voter in order to win the general election. Towards what position will the candidates converge? (Hint: Recall that the median voter is the voter with the position such that exactly half of the total number of voters are above and below his or her position).

NOTE: Show your work. If you use *Stata* or *Mathematica*, attach print-outs of (the relevant portions of) your log/graphs/output, enumerating which problem that material applies to. You may discuss the material with other students, but your submission must not merely be copied from another source – it must be your own work.