

1. This problem is similar to the workshop question, but with a couple of changes. The plaintiff and defendant in a small claims civil case are preparing to go to trial and must choose the form of their legal representation. They cannot avoid the trial at this point. Each may elect to have no lawyer, to hire a mediocre lawyer for \$2000, or hire a good lawyer for \$4000. They must pay their own lawyers no matter who wins the case. Assume that if one of the litigants pays more for their lawyer they win the case, and that since the *plaintiff* has a slightly better case if they both spend the same amount then the plaintiff wins. Finally, if the plaintiff wins the defendant must pay him a judgment of \$10000.
  - (a) Construct the payoff matrix for this case, taking into account any judgments and legal costs.
  - (b) Show that there is no pure strategy Nash equilibrium and find the Pareto optimal outcomes.
  - (c) Find the security levels of the litigants in the reduced matrix.
  - (d) Plot the payoff polygon of the reduced matrix. Indicate all the pure and mixed strategy Pareto optimal outcomes on your payoff polygon.
  - (e) Take the status quo point to be the security levels of the two litigants. Plot the status quo point on the payoff polygon and hence shade the negotiation set.
  - (f) The Nash bargaining solution for this game turns out to be \$8000 for the plaintiff. Find the payoff for the defendant by finding the point with this payoff in your negotiation set.
  - (g) Based on the Nash bargaining solution above, find the correct Pareto optimal mixed strategy that litigants should employ.
  
2. Complete Straffin Ch. 16 Ex. 1 (take the Nash solution as given, and compare it to the other two Pareto optimal outcomes), 7.
  
3. Complete Straffin Ch. 17 Ex. 1,3,4