Sample Homework Problems from the Last Lecture – answer key

1. Each of the following situations involves moral hazard. In each case, identify the principal and the agent, and explain why there is asymmetric information. How does the action described reduce the problem of moral hazard?
   a. Landlords require tenants to pay security deposits.
      Tenants are the agents; landlords are the principal. There is asymmetric information because the landlord does not know how well the tenant is treating the apartment. Having a security deposit reduces the probability that the tenant will abuse the apartment.
   b. Firms compensate top executives with options to buy company stock at a given price in the future.
      The firm is the principal and the executives are the agents. There is asymmetric information because the firm does not know if the executive is making decisions that are best for the firm. By letting the executive buy stock at a certain price in the future, the firm makes it so the executive will make money if the company’s stock price increases and thus will want to make decisions that make the firm more profitable.
   c. Car insurance companies offer discounts to customers who install antitheft devices in their cars. The insurance company is the principal and the customer is the agent. There is asymmetric information because the insurance company doesn’t know if the customer is parking the car in risky areas, etc. Installing antitheft devices reduces moral hazard because it makes it so the customer is less likely to have the car stolen even if it is parked in a risky place.

2. Provide an example that violates each of the following principles:
   a. unanimity
      Suppose I let the class vote on an option that everyone will automatically get an A on the final exam. Everyone wants that to happen, but for some reason it doesn’t win the vote.
   b. transitivity
      If a group of students prefers having a full class to having no class and they prefer having no class to having partial class, but they prefer having a partial class to having a full class.
   c. independence of irrelevant alternatives
      You are deciding if you should take French or Spanish and are leaning towards French. They you find out that we offer a class in Latin so you decide to take Spanish instead of French.
   d. no dictators
      If one person’s vote outweighs everyone else’s.

3. State Arrow’s Impossibilities Theorem in your own words. What does this imply about a democracy’s ability to make good decisions?
   It is impossible to come up with a collective decision making mechanism that satisfies the reasonable principles of unanimity, transitivity, independence of irrelevant alternatives, and no dictators. This means that it will be hard to collectively make decisions that seem reasonable.