

Homework 5

Due on Monday 13th before midnight - Recitation Tuesday 4th at 9:00am

1. Show that the second-price auction is an application of the VCG mechanism.
2. Suppose a bridge costs 13 to build¹ and that the valuation of the bridge by the four individuals is given by

individual	1	2	3	4
valuation	5	4	1	2

- (a) Apply the pivot mechanism to decide whether or not the bridge is built, and the taxes (negative or positive) levied on the individuals; and the surplus (if any) collected by the government.
 - (b) Now suppose the bridge cost is 11. Answer the questions in part (a) again.
3. Suppose there are equal portions of low-ability ($t = 1$) and high-ability ($t = 2$) workers. The productivity of a worker of type $t = 1, 2$ is given by $\eta_t(e) = 2te$, where e is the education level. The utility of wage w and education e to a student of type t is $u_t(w, e) = 4\sqrt{w} - \frac{2e}{t}$. Find the Rothschild-Stiglitz equilibrium.

¹1 unit of money here represents \$10,000