

1. Show that the price of stability of affine congestion games (where every cost function $c_e(\cdot)$ has the form

$$c_e(t) = a_e \cdot t + b_e$$

with $a_e, b_e \geq 0$) is at most 2.

2. Exercise 18.4 of the textbook. (You need to read sections 18.2.2 and 18.3.2 first.)

3. In set 1, exercise 19.9 of the text book, an upper bound of k is proved for the price of anarchy of the global connection games. Show that this bound is tight. (Hint: Use the following graph G with two vertices and two parallel edges. One edge has cost $1 + \epsilon$ and the other has cost k .)