Part I

In Figure 1, one unit of traffic \((r = 1)\) is to be routed from \(s\) to \(t\). What is the price of anarchy?

![Figure 1: A selfish routing instance.](image)

Part II

Let \((G, r, c)\) be a nonatomic selfish routing game such that

1. The cost functions in \(c\) are M/M/1 delay functions. That is, they come from the set \(\{f_u(x) \mid u > 0\}\), where

   \[
   f_u(x) = \begin{cases} 
   1/(u-x) & \text{if } 0 \leq x < u \\
   \infty & \text{otherwise} 
   \end{cases}
   \]

   The value \(u\) is called the capacity of the edge.

2. It is possible to route all commodities without reaching any edge capacities.

Show that the price of anarchy for such a game can be arbitrarily high.