Exercise 1:
State for each $M \geq 1$ a network congestion game with two players such that the Price of Anarchy of pure Nash equilibria is at least $M$.

Exercise 2:
A fair cost-sharing game is a congestion game such that for all resources $r \in \mathcal{R}$ the delay function can be modeled as $d_r(x) = c_r / x$ for a constant $c_r$. Show that fair cost sharing games with $n$ players are $(n, 0)$-smooth.