

Problem 4

Using Einstein notation:

$$y^i = \frac{x_{0,n}^i p^n}{1 + x_{1,m}^i q^m}$$

$$y^i (1 + x_{1,m}^i q^m) = x_{0,n}^i p^n$$

$$y^i = x_{0,n}^i p^n - y^i x_{1,m}^i q^m$$

Define $x_j^i = \begin{cases} x_{0,n}^i & \text{if } i \leq \max(n) \\ -x_{1,m}^i y^i & \text{else.} \end{cases}$

← (Basically
r-stack)

$$\tilde{p}^j = \begin{cases} p^n & \text{if } i \leq \max(n) \\ q^m & \text{else} \end{cases}$$

$$y^i = x_j^i \tilde{p}^j$$

$$\Rightarrow \boxed{\tilde{p}^j = (x^{-1})^j_i y^i.}$$