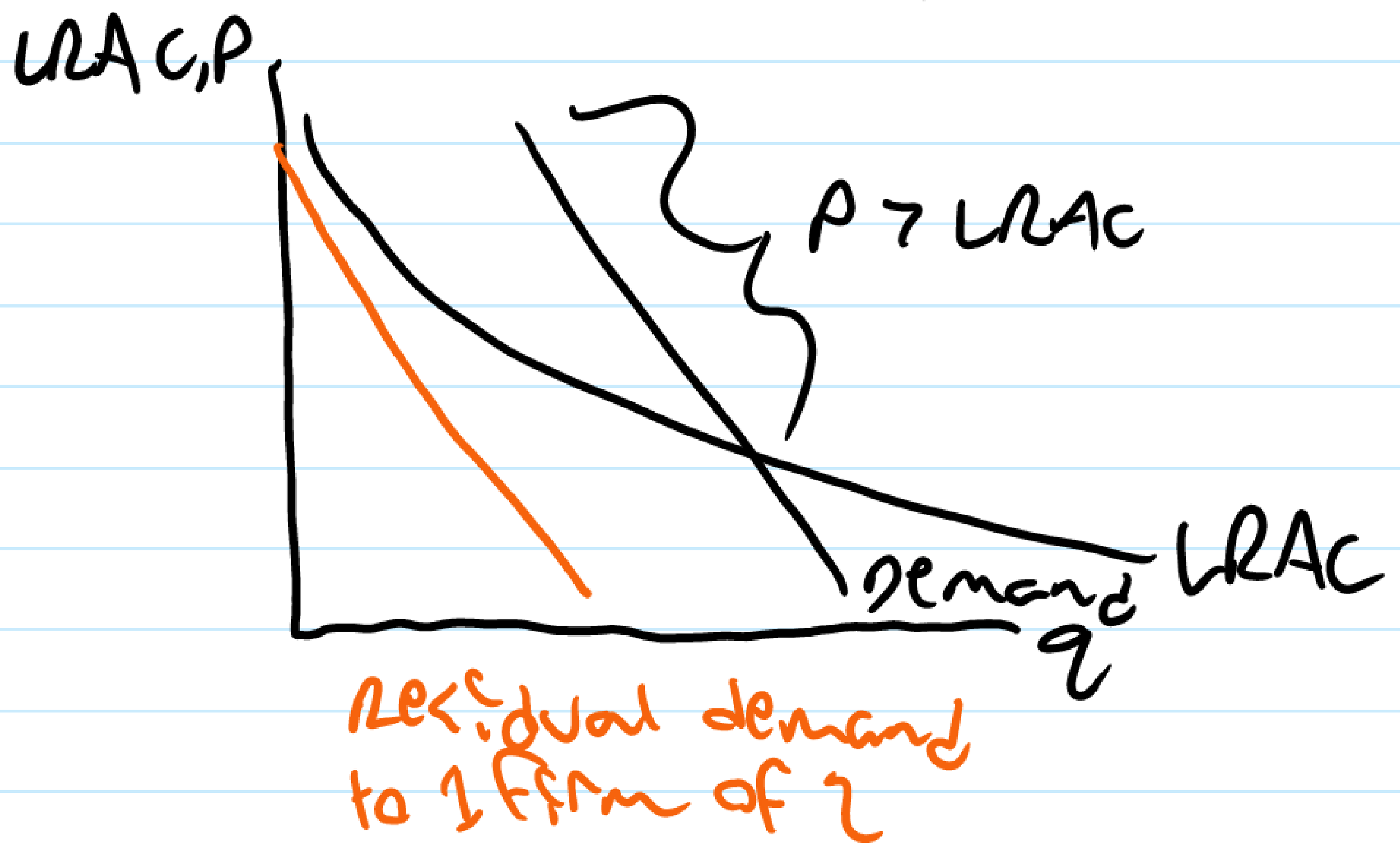
16.5-6 Long Run Entry 1-2

Friday, April 9, 2021 12:13 PM

Entry Barriers

Exogenous economies of scale, Patent restrictions?
Endogenous entry limit pricing

Economies of Scale
↳ Natural Monopoly



Electricity distribution grid
water

$P = 1 - q_1 - q_2 = 1 - \sum_{i=1}^{n} q_i$ $C_i = c \cdot q_i + f$

$\pi_j = (1 - \sum_{i=0}^{n} q_i) q_j - c q_j - f$

$\frac{d\pi_j}{dq_j} = 1 - \sum_{1}^{n} q_i - q_j - c = 0$

$2q_j = 1 - c - \sum_{i \neq j} q_i$

$q_j = \underbrace{\frac{1-c}{2}}_{q_{mon}} - \frac{1}{2} \sum_{i \neq j} q_i$

w/ symmetry

$q = \frac{1-c}{2} - \frac{1}{2}(n-1) q$

$(n+1) q = 1 - c$

$q = \frac{1-c}{n+1}$, $P = 1 - nq = 1 - (\frac{n}{n+1})(1-c)$

$P - c = 1 - c - (\frac{n}{n+1})(1-c)$
$= 1-c/n+1$

$\pi_j = (P-c)q - f$
$= (\frac{1-c}{n+1})^2 - f$

q_j $n\uparrow$
$q\downarrow$
$P\downarrow \rightarrow Q = nq\uparrow$
$\pi\downarrow$

$\pi > 0 \rightarrow$ entry
$\pi = 0$ normal profit

$\pi(n) \geq 0$ n = # of firms
$\pi(n+1) < 0$

$\pi_i = (\frac{1-c}{n+1})^2 - f = 0$

$\frac{1-c}{n+1} = \sqrt{f}$

$n = 1-c/\sqrt{f} - 1$

$n = \text{floor}[1-c/\sqrt{f} - 1]$

$q = 1 - P$ $Q = 1 - P$
$P = 1 - q$ $P = 1 - Q$

$\bar{P} = 1$ $(\frac{\bar{P} - c}{\sqrt{f}} - 1)$

$\sqrt{f} \rightarrow$ large, $n \rightarrow 0$

Entry w/ differentiated Products