

Prob. Ch.08: Competition

- 1) Suppose a competitive firm's short run total cost curve is: $C = 200 + 4q + 2q^2$
- If $P = \$24$, find the output and profit of the firm.
 - Find the supply equation of the firm, and show it on a diagram.
 - If there are 10 identical firms, find the equation of the market supply curve and show it on a diagram

(a) At equilibrium,

$$MC = MR$$

$$MC = \frac{dC}{dq} = 4 + 4q$$

$$\therefore 4 + 4q = 24$$

$$q = 5 \text{ units}$$

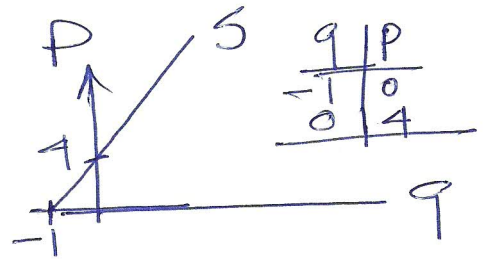
$$\pi = \$24(5) - [200 + 4(5) + 2(5)^2] = -\$150$$

(b) For supply curve, set

$$MC = P$$

$$4 + 4q = P$$

$$\therefore q = -1 + \frac{1}{4}P$$



(c) For 10 firms,

$$Q = \sum_{i=1}^{10} q_i = 10 \left[-1 + \frac{1}{4}P \right] = -10 + \frac{10}{4}P$$

