

**21. Incorrect. The answer is true not false.** To get total MC for the firm horizontally sum the inverse MC costs curve. Or at each MC add the quantities.

$$Q_1 = -7.5 + 0.5MC_1,$$

$$Q_2 = -0.833 + 0.167MC_2.$$

$$\text{Total quantity is } Q_1 + Q_2 = Q = -8.333 + 0.667MC.$$

Reinvert the summed MC curve to get  $MC = 12.5 + 1.5Q$ .

Invert demand to get

$$P = 100 - 1Q. \text{ Then } MR = 100 - 2Q.$$

Set  $MC = MR$ .

$$12.5 + 1.5Q = 100 - 2Q.$$

Solving yields  $Q = 25$ .  $P = 100 - 25 = 75$ .

Production in plant 1 is where

$$MC_1 = MC = 50 = 15 + 2Q_1.$$

$$Q_1 = 17.5.$$

Production in plant 2 is where

$$MC_2 = 50 = 5 + 6Q_2. \quad Q_2 = 7.5.$$

Profits can be computed as  $P \cdot Q - \int MC_1 dQ_1 - \int MC_2 dQ_2$ .