

Study Question – Profit, revisited

A firm that does not price discriminate can sell as much of its product as it wants to at a constant price per unit of \$60. This firm has average cost equation:

$$ATC = 100/Q + 50 + 10Q$$

Calculate the profit-maximizing values of P and Q, and total profits (or loss).

$$TC = ATC \times Q = 100 + 50Q + 10Q^2$$

$$MC = dTC/dQ = 50 + 20Q$$

Since price is constant, $P=MR$, so $MR=60$. Now set $MR = MC$ and solve for Q :

$$60 = 50 + 20Q$$

$$10 = 20Q$$

$$Q = .5$$

$$\text{profit} = .5(60) - (100 + 50(.5) + 10(.5^2)) = 30 - 127.5 = -97.5$$