

H W # 1

N 2.3

$$a) C(q) = 500,000 + 0.1 \cdot 8,000,000 + 4q = 1,300,000 + 4q; \text{ (We have to include opportunity cost of } 0.1 \cdot 8,000,000 \text{ in total costs)}$$

b) $q_m = 10,000,000$ is the maximum capacity of production once the land and equipment have been purchased the minimum price, at which it is profitable to produce is:

$$\frac{500,000}{q_m} + \frac{4q_m}{q_m} = \frac{500,000}{10,000,000} + 4 = 4,05$$

$$a) TR(q) = p \cdot q = \left(102 - \frac{q}{100}\right) \cdot q \quad N^p = 2.8$$

$$b) MR(q) = \frac{\partial TR(q)}{\partial q} = 102 - \frac{q}{50}$$

$$c) MR(q) = MC(q) \Rightarrow 102 - \frac{q}{50} = q^* \Rightarrow q^* = 100$$

$$\text{Profit} = TR - C(q) = p^* q^* - \frac{(q^*)^2}{2} = \left(102 - \frac{100}{100}\right) \cdot 100 - \frac{100^2}{2} = 5100$$

N 2.9

$$a) TR(q) = pq, \quad p = 500 - \frac{q}{2}$$

$$\Rightarrow TR = \left(500 - \frac{q}{2}\right) q$$

$$\Rightarrow MR = 500 - q;$$

b) $\frac{\partial TR}{\partial q} = 500 - q = 0 \Rightarrow q^* = 500 \Rightarrow$

$p^* = 500 - \frac{500}{2} = 250 \Rightarrow$ generates the greatest revenue

c) $TC = VC + FC = (20 + 30)q + 25000 = 50q + 25,000$

$\Rightarrow MC = 50$

$MC = MR \Rightarrow 500 - q = 50$

$\Rightarrow q^{**} = 450$

$\Rightarrow p^{**} = 500 - \frac{450}{2} = 275$ - profit maximizing price.

$N^0 = 4.3$

(i)

	N	
	I	FC
T	I	<u>35, 35</u> <u>70, 30</u>
	FC	<u>30, 70</u> <u>15, 15</u>

a) can be solved by dominant strategies (I dominates FC)

b) $NE = \{(I, I)\}$

c) Players are rational and believe other player is rational

(ii)

	N	
	I	FC
T	I	<u>42, 28</u> <u>70, 30</u>
	FC	<u>30, 70</u> <u>18, 12</u>

a) can be solved by dominant strategies

b) $NE = \{(I, FC)\}$

c) Players are rational and believe other player is rational

(iii)

	N	
	I	FC
I	I	<u>42, 28</u> <u>70, 50</u>
	FC	<u>50, 70</u> <u>30, 20</u>

a) can not be solved by dominant strategies

b) $NE = \{(I, FC), (FC, I)\}$

c) Players are rational and believe other player is rational.

Nº 4.6. (a)

U.S.

		J	
		L	H
U.S.	L	<u>4</u> 3	<u>2</u> <u>4</u>
	H	3 <u>2</u>	1

In case of U.S. L dominates H.

$$NE = \{(L, H)\}$$

Players behave rationally; players are rational and believe other player ~~is~~ rational, and have rational beliefs about him.