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Question 1

(a) $SRMC = 3Q^2 - 16Q + 30$

$$SRAC = Q^2 - 8Q + 30 + \frac{5}{Q}$$

$$SRAVC = Q^2 - 8Q + 30$$

(b) At $Q = 0 \Rightarrow SRMC = p = 30$

(c)

$$p = SRMC = 3Q^2 - 16Q + 30$$

$$Q = \frac{8 + \sqrt{3p - 26}}{3}$$

(d) $Q = 6 \Rightarrow SRMC = 42$

$$\frac{d}{dQ}SRMC(6) = 20 > 0$$

At $p = 42$, firm produce 6 units of output.

(e) At $p = 25$, each firm produces 5 units.

Demand = Supply

$$80 = 5n$$

$$n = 16 \text{ (firms)}$$

Question 3

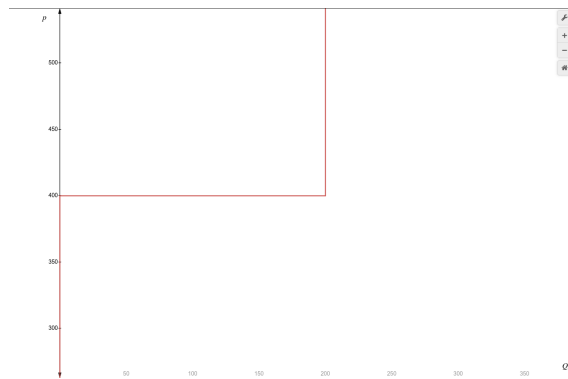
(a) as firm is trying to maximize

$$profit = pQ - VC - FX$$

$$profit = Q(p - 400)$$

therefore:

$$Q = \begin{cases} Q_{max} = 200 & p > 400 \\ \text{Any between } 0 - 200 & p = 400 \\ 0 & p < 400 \end{cases}$$



(b) Supply = Demand

At $p = 400$,

Demand = 16,000

\Rightarrow Each firm produces 266.66 tons $>$ 200 tons cap.

At $p > 400$

Supply = 200 x 60 = 12,000 = Demand

$p = 800$