In order to grade your solutions and understand your answers please show your work.

Problem 1 (50 Points)

Assume that the cost function of firm A is: $C(q) = \frac{2}{3}q^3 - 3q^2 + 12q + 6$ where $MC = 2q^2 - 6q + 12$, answer the following questions.

1) Is this cost function framed in a long or short run scenario? Explain your answer.

2) What is the shut down price for this firm.

3) Find and graph the supply function for firm A, be careful to explicitly show for which prices the firm shuts down.

Problem 2 (50 Points)

Assume that the cost function of firm B is: $C(q) = \frac{1}{6}q^3 - 2q^2 + 10q$ where $MC = \frac{1}{2}q^2 - 4q + 10$, answer the following questions.

1) Is this cost function framed in a long or short run scenario? Explain your answer.

2) If the market price is 20, what is the profit or loss of firm B? is this situation sustainable in the long run? Explain your answer.

3) Assume now that the technology of firm B is representative of the technology accessible to anyone in the market and also that the market demand is $Q^d = 40 - p$. What is the equilibrium in this market? How many firms are in the market and how much do each of them produce?