(35 points) Recall the eggs industry mentioned in our vertical integration lesson. Suppose the production of 1 egg requires 1 parent stock. The marginal cost of 1 parent stock is 10. The farmer's own marginal cost of producing 1 egg is 5. The demand for eggs is given by:

$$P(Q) = 100 - Q$$

Suppose the parent stock industry is operated by a monopoly while the eggs industry is perfectly competitive.

(a) (3 points) Let the price per 1 parent stock be "P_{ps}", find the derived market demand for parent stocks.

(b) (6 points) What would be the price of each parent stock? What would be the quantity of parent stocks sold in the market? Find the profit earned by the parent stock importer.

(c) (6 points) What would be the price of each egg? What would be the quantity of eggs sold in the market? Find the profit earned by each egg farmer.

(d) (2 points) Would any firm (whether it be the parent stock importer or an egg farmer) benefit from vertical integration? Briefly explain why or why not.

(e) (6 points) Given the below average cost schedule for the parent stock importer, can the current monopoly quantity deter entry to the parent stock industry? Why or why not?

Quantity	AC = 1500/Q
10	150
20	75
30	50
40	38
50	30
60	25
70	21
80	19
90	17
100	15

(f) (5 points) For **what range** of committed quantity by the monopoly parent stock importer can deter entry?

(g) (4 points) Suppose there are now only 4 identical egg farmers playing a non-cooperative Cournot game. The marginal cost of producing the eggs itself is 5 per unit, find the derived demand for parent stocks faced by the monopoly parent stock importer.