Bachelor of Statistical Data Science
Economics 1
Assignment 4

To be submitted by 28/11/2024

1. Perfectly competitive firm Doggies Paradise Inc. sells winter coats for dogs. Dog coats sell for $72 each. The fixed costs of production are $100. The total variable costs are $64 for one unit, $84 for two units, $114 for three units, $184 for four units, and $270 for five units.
    a) In the form of a table, calculate total revenue, marginal revenue, total cost and marginal cost for each output level (one to five units).
    b) What is the profit maximizing quantity? (8+2=10)

2. What two rules does a perfectly competitive firm apply to determine its profit-maximizing quantity of output (Hint: use calculas)? How does the average cost curve help to show whether a firm is making profits or losses? (3+7=10)

3. Given that a competitive firm's short-run cost function is
   $C(q) = 100q\text{-}4q^2 + 0.2q^3 + 450$,
   what is the firm's short-run supply curve? If the price is $p = 115$, how much output does the firm supply? (6+4=10)

4. Each firm in a competitive market has a cost function of $C = q + q^2 + q^3$.
   The market has an unlimited number of potential firms. The market demand function is $Q = 24 - p$. Determine the long-run equilibrium price, quantity per firm, market quantity, and number of firms. (3+3+2+2=10)