

Math 104 section 108 Homework week 6

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1 Price Elasticity of Demand

Exercise 1.1. A tailor is currently producing 80 suits per month and sells them for \$100 per suit. His monthly demand curve is given by $q = 100 - 2\sqrt{p}$. Find the current price elasticity of demand and use it to decide whether price should be raised or lowered to increase his revenue. (2.5 marks)

Exercise 1.2. The price p (in dollars) and the demand q for a product are related by the following demand equation: $p^3 + q + q^3 = 38$. Find the elasticity of demand in terms of p and q for this product. (2.5 marks)

2 Marginal Cost

Exercise 2.1. Suppose the demand curve for a product produced by a firm is given by $q = 270 - p$ and the cost function is $C(q) = 12q + \frac{4}{5}q^2$. Find the profit maximizing output for the firm. (2.5 marks)

3 Mean Value Theorem

Exercise 3.1. Suppose that we know that $f(x)$ is continuous and differentiable on $[6, 15]$. Let's also suppose that we know that $f(6) = -2$ and that we know that $f'(x) \leq 10$. What is the largest possible value for $f(15)$. (2.5 marks)