

Group Quiz 5

TQS 211

Show *all* your work (algebraically or geometrically) for each and simplify. No credit is given without supporting work.

1. Consider $f(x) = x + 2 \sin x$.

(a) [2] Find the exact values of all the critical points of the graph of f .

(b) [2] Find the exact values of all the points of inflections on the graph of f .

(c) [1] *Carefully* sketch the graph of f .

2. (a) [1] Production of an item has fixed costs of \$10,000 and variable costs of \$2 per item. Express the cost, C , of producing q items.

(b) [1] The relationship between price, p , and quantity, q demand is linear. Market research shows that 10,000 items are sold when the price is \$5 and 12,887 items are sold when the price is \$4.50. Express q as a function of price p

(c) [3] What is the maximum profit a company with the above data can make? (Partial credit is given if you express the profit earned as a function of one variable.)