

## Decision Report 2

MATH 144 Applied Calculus for Business

Fitting a Demand Function

Team: \_\_\_\_\_

Score:

In your previous decision report, your team constructed a table of data relating quantities  $q$  (in thousands) and prices  $p$  (in dollars per unit) for your product's projected sales on the national market.

Now, your team's job is to *extrapolate* from that data: to determine a mathematical function

$$p = D(q)$$

which best fits your table of data. This function is known as a **demand function**, and its job is to capture the relationship between the unit price charged for a product, and the quantity of product that would sell at that price.

Your Vice President of National Sales remains unconvinced by your previous findings, in which you determined whether a national sales goal of 1.5 million units was realistic. Your job in this decision report is to make an even stronger case for your previous results.

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**Decision:** Reinforce your previous decision by determining both **(a)** the maximum price that is possible to charge for your product in the national market, and **(b)** the maximum quantity that is possible to sell in the national market. Explain your findings, and why they support your previous decision report, in a brief memo to your Vice President.

**Deliverable:** Use a trend line in *Excel* to fit a quadratic function to your national market data, with quantity (in thousands) on the horizontal axis and price on the vertical. Report both the equation of this quadratic, using the variables  $q$  and  $p$  in place of  $x$  and  $y$ , its correlation coefficient, and the computations that inform your decision.

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