

1. Based on Section 2.2 (p.111)/ #30

A marketing firm wishes to find a function that relates the sales  $S$  of a product and  $A$ , the amount spent on advertising the product. The data are obtained from past experience. Advertising and sales are measured in thousands of dollars.

- (a) Let  $A$  be the independent variable and  $S$  the dependent variable. Enter the data in the table into your calculator and graph the data.

Advertising Expenditures, $A$	Sales, $S$
20	335
22	339
22.5	338
24	343
24	341
27	350
28.3	351

- (b) Find the line of best fit (called the regression line) relating advertising expenditures and sales.

- (c) Interpret the slope.

- (d) Express the relationship in (b) using function notation and state the domain.

- (e) Predict sales if advertising expenditures are \$25,000

2. The table to the right gives the revenue of Microsoft for various years.

Year	Revenue (in billions of dollars)
1990	1.2
1992	2.8
1994	4.7
1996	9.1
1998	15.3
1999	19.8

- (a) Let  $t = 0$  correspond to the year 1990. Enter the data in the table into your calculator and graph the data.

- (b) Let  $y = f(t)$  represent Microsoft's revenue (in billions of dollars) for the year that is  $t$  years after 1990; that is,  $t = 0$  corresponds to 1990. Find linear and quadratic regression models for  $y = f(t)$ . Write your results below. Round your answers to four decimal places.

linear:

quadratic:

- (c) Graph your models along with the data. Which model do you think fits the data best?

- (d) Using the model you chose in part (c), predict the revenue of Microsoft in 2000.

- (e) Using the model you chose in part (c), predict when the revenue of Microsoft will reach \$50 billion.