

Advanced Math

1-2

(Day 2)

Lines and Slope

- 93) Your salary was \$28,500 in 1994 and \$32,900 in 1996. If your salary follows a linear growth pattern, what will your salary be in 1999?

Let $x = \# \text{ years}$, where $x=0$ is 1994 ANS

$$y = mx + b$$

$$y = mx + 28500$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{32900 - 28500}{2 - 0} = \frac{4400}{2} = 2200/\text{yr}$$

$$y = 2200x + 28500$$

$$y = 2200(5) + 28500$$

$$y = \boxed{39500}$$

I picked 1994 for my starting year because it makes more sense than 0, because we weren't even alive then, and it can serve as b at the same time.

- 99) A contractor purchases a piece of equipment for \$36,500. The equipment requires an average expenditure of \$5.25 per hour for fuel and maintenance, and the operator is paid \$11.50 per hour.

- a) Write a linear equation giving the total cost C of operating this equipment for t hours. (Include the purchase cost of the equipment.)

$$C = 36500 + 5.25t + 11.50t \Rightarrow C = 16.75t + 36500$$

- b) Assume customers are charged \$27 per hour of machine use, write an equation for the revenue R derived from t hours of use.

$$R = 27t$$

- c) Use the profit formula, $P = R - C$, to write an equation for the profit derived from t hours of use.

$$P = (27t) - (16.75t + 36500)$$

$$P = 10.25t - 36500$$

- d) Use the result in part c to find the number of hours this equipment must be used to find the break even point (a profit of \$0).

$$0 = 10.25t - 36500$$

$$36500 = 10.25t$$

$$\frac{36500}{10.25} = t$$

$$t = 3560.975 \approx \boxed{3561 \text{ hours}}$$

Assignment:

Pg. 131
91 - 104 all,
107-110 all