1. Find x

$$\log_b x + \log_b (x - 4) = \log_b 21$$

2. If $\$100$ is invested at 6% compounded

   (a) annually
   (b) semiannually
   (c) quarterly
   (d) monthly

   what is the amount after 4 years? How much interest is earned?

3. A company buys a large copy machine for $\$12,000$ and finances it at 18% compounded monthly. If the loan is to be amortized in 6 years in equal monthly payments, how much is each payment? How much interest will be paid?

4. Let

$$f(x) = (2x - 15)\left(x^2 + 18\right)$$

(a) Find the equation of the line tangent to the graph of $f(x)$ at $x = 1$.

(b) Find the value(s) of x where the tangent line is horizontal.

5. The total cost (in dollars) of manufacturing x auto body frames is

$$C(x) = 60,000 + 300x$$

(a) Find the average cost per unit if 500 frames are produced

(b) Find the marginal average cost at a production level of 500 units, and interpret the results

(c) Use the results from parts (a) and (b) to estimate the average cost per frame if 501 frames are produced.

6. The price-demand equation and the cost function for the production of table saws are given, respectively, by

$$p = 200 - \frac{x}{30} \text{and } C(x) = 72,000 + 60x$$

where x is the number of saws that can be sold at a price of $\$p$ per saw and $C(x)$ is the total cost (in dollars) of producing x saws.

(a) Find the marginal cost.

(b) Find the revenue function in terms of x.

(c) Find the marginal revenue.

(d) Find $R'(1,500)$ and $R'(4,500)$ and interpret the results.

(e) Find the break-even points, and indicate regions of loss and profit.

(f) Find the profit function in terms of x.

(g) Find the marginal profit.

(h) Find $P'(1,500)$ and $P'(3,000)$, and interpret the results.