1. The research department in a company that manufactures AM/FM clock radios established the following price-demand and cost functions:

$$p(x) = 65 - 1.5x$$
$$C(x) = 150 + 15x$$

   where x is in thousands of units, and $C(x)$ is in thousands of dollars.

   (a) Find the Revenue function $R(x)$ and the Profit function $P(x)$

   (b) How many radios should be produced to maximize the Profit?

   (c) What is the maximum Profit?

   (d) At what price will the Profit be maximum?

   (e) In the same coordinate system, sketch the graph of $C(x)$, $R(x)$ and $P(x)$

2. A computer system was purchased by a small business for $12,000$ and, for tax purposes, is assumed to have a salvage value of $2,000$ after 8 years. If its value is depreciated linearly from $12,000$ to $2,000$:

   (a) Find the linear equation that relates the value V in dollars to the time t in years.

   (b) What would be the value of the system after 5 years?

3. The table shows the rates charged by Car Rental Inc. for the location of some automobile for one day:

   50 for the first 100 Kilometers or less

   0.20 per Kilometer for the next 250 Kilometers

   0.35 per Kilometer for all over 350 Kilometers

   (a) What is the cost for renting a car if you drive 300 Kilometers?

   (b) Write a piecewise function $S(x)$ for the cost of renting a car for a customer who drives x Kilometers?

   (c) Sketch the graph of $S(x)$.

4. You need to borrow some money. Bank A offers loans at a rate of 6.3% compounded weekly. Bank B offers loans at a rate of 6.5% compounded semi-annually. Which bank should you choose and why?

5. A worker aged 40 wishes to accumulate a fund for retirement by depositing $1000 at the end of each year for 25 years. Starting at age 65 the worker plans to make 15 annual withdrawals at the end of each year.

   (a) Find the amount of each withdrawal, if the effective rate of interest is 8% compounded annually.

(b) How much interest will be earned over the whole period?

6. A borrower repays a loan by making sixty monthly payments of $100. Interest is at the nominal annual rate of 12% convertible monthly.

   (a) How much was borrowed?
   (b) What is the outstanding balance of the loan after the 10th payment?

7. You can afford monthly deposits of $100 into an account that pays 6% compounded monthly.

   (a) How long will it take until you have $2,000$? (Round to the next-higher month if not exact.)
   (b) How much interest will you earn over the whole period?