

COMPOUND INTEREST

Pg 32

4. Suppose \$500 is deposited into an account that earns 6.5% annually.
- If the interest is compounded monthly, what is the monthly rate?
 - What is the balance after 1 mo?
 - After 1 yr?
 - After 29 mo?
 - What would the annual interest rate (compounded monthly) have to be for the \$500 to grow to \$600 *during* the 29th month? Write the recursive routine you used.

Pg 35-37

4. On October 1, \$24,000 is invested, earning 6.4% annually, compounded monthly. Beginning on November 1, a monthly withdrawal of \$100 is made, and the withdrawals continue on the first of every month thereafter.
- Write a recursive routine for this problem.
 - List the first five terms of this sequence of balances.
 - What is the meaning of the fifth term?
 - What is the balance at the end of 1 yr? At the end of 3 yr?
9. Suppose you want to buy a new car and need to finance or borrow \$11,000. The annual interest rate for a car loan is 9.6% of the unpaid balance, compounded monthly.
- Write a recursive routine that provides the declining balances of the loan for a monthly payment of \$274.
 - List the first five terms of this sequence.
 - When will the loan be paid off?
 - What is the total cost paid for the new car over this time period?
10. a. What happens to the balance in Problem 4 if the same interest and withdrawal pattern continues for a long time?
b. What monthly withdrawal would maintain a constant balance of \$24,000?

Pg 47

2. Find the value of a \$1,000 investment, at an annual rate of 6.5% compounded quarterly, for each time period.
- 10 yr
 - 20 yr
 - 30 yr
5. Suppose a benevolent grandparent deposits \$5,000 in an account for a 10 yr old grandchild. The account pays interest at an annual rate of 8.5% compounded monthly.
- What regular monthly deposits are needed to assure that the account will be worth \$1 million by the time the youngster is 55 yr old? Write a recursive routine, and use guess-and-check to find the amount of the monthly deposit needed.
 - Sketch the graph of increasing balances, and indicate the graphing window used.
6. Meg Abux wants to buy a new house and must finance \$60,000 at 9.6% annual interest compounded monthly on the unpaid balance.
- What monthly payment is needed to pay off the loan in 25 yr?
 - Sketch the graph of the unpaid balances, and indicate the graphing window used.