

1. Write an equation in recursive form that describes the account balance  $f(n)$  owed to the bank for a loan of  $S$  at a percentage rate of  $r\%$ , to be paid back over  $n$  years. Let  $x$  represent the amount of each payment.

2. Use the recursive form equation to write out the first few iterations of the series below.

$$f(0) =$$

$$f(1) =$$

$$f(2) =$$

$$f(3) =$$

$$f(4) =$$

$$f(n) =$$

3. Determine the closed form equation for  $f(n)$ .

4. Solve the closed form equation for  $x$ , which represents the monthly payment to the bank.

5. Write a computer program that will allow you to input certain data that will allow you to compute the monthly payment for any loan.