City Semester Name:_____

Review of Sequences and Series

Show all work for full credit.

1. Find a_5 for the following sequences.
   (a) $a_n = 2n - 4$
   (b) $a_n = (-1)^n \dfrac{3}{2^n}$
   (c) $a_n = n(n-1)(n-2)(n-3)/(n+1)$
   (d) $a_3 = 2$ and $a_n = a_{n-1}^2 + na_{n-1}$
2. The sequence is b_n is arithmetic. $b_3 = 12$ and $b_8 = -3$. Find the general term b_n and then find the 111^{th} term.
3. The sequence c_n is geometric. $c_2 = 3$ and $c_5 = \dfrac{3}{8}$. Find the general term c_n, and find tenth term of the sequence.
4. Find the 50th term of the arithmetic sequence whose common difference 12 and whose second term is 10.
5. Find the ninth term of the geometric sequence whose common ratio is 1/3 and whose 3rd term is 8.
6. Write the following series using sigma notation.
   (a) $2 + 3 + 4 + 5 + \ldots + 98 + 99$
   (b) $-3 + 6 - 12 + 24 - 48 + \ldots - 768$
   (c) $5 + 1 - 3 - 7 - 11 - 15 - \ldots - 195$
7. Do some exercises summing arithmetic and geometric series from the textbook.
8. You deposit 1000 dollars a year for 10 years in a bank account paying 6% compounded semi-annually. How much will your account have after 10 years?
9. You receive 5000 dollars a year for 10 years. If you discount these payments at 3%, what is the present value of these cash flows?
10. If you will receive 10 payments of 5000 dollars each year starting 3 years from now, what is the present value of these cash flows using a discount factor of 4%?
11. What is the payment on a 12 year mortgage with annual payments, a principal amount of \$100,000 and an interest rate of 4%?
12. What is the payment on a 15 year mortgage with monthly payments, a principal amount of \$250,000 and an interest rate of 3.75%?