Name:_____   Date:_____

Pre-Calculus 11: HW 1.2 Arithmetic Series

1. Find the sum of the following arithmetic series. Use the formula: $S_n = \frac{n}{2} \times (a + t_n)$

i) $13 + 17 + 21 + 25 + ... + t_8$	ii) $-5 + 1 + 7 + 13 + ... + t_{12}$
iii) $9 + 14 + 19 + 24 + ... + 104$	iv) $11 + 28 + 45 + 62 + ... + 368$
v) $\dfrac{24}{3} + \dfrac{14}{3} + \dfrac{4}{3} + \dfrac{-6}{3} + ... \, t_{10}$	vi) $6 + \dfrac{9}{2} + 3 + \dfrac{3}{2} + ... \, -28.5$

2. Given each series and the information provided, find the missing value:

a) $a = 12, \ n = 20, \ d = 4, \ S_{20} = ?$	b) $a = 7, \ t_n = 42, \ S_n = 857.5, \ n = ?$
c) $d = 3.5, \ n = 13, \ S_n = 416, \ a = ?$	d) $d = -7, \ n = 16, \ S_n = -600, \ a = ?$
e) $a = 12, \ S_{15} = 453, \ d = ?$	f) $a = 4.8, \ n = 12, \ d = \frac{5}{3}, \ S_{12} = ?$

3. Given the equation of the general term, find the indicated sums:

a) $t_n = 5 + 3n$ $S_{12} = ?$ $(Sum \ of \ first \ 12 terms)$	b) $t_n = 7 + 8n$ $S_9 = ?$ $(Sum \ of \ first \ 9 \ terms)$

c) $t_n = 8 + (n-1)12$ $S_{20} = ?$ (*Sum of first* 20*terms*)	d) $t_n = -\frac{12}{5} + (n-1)\frac{2}{3}$ $S_{25} = ?$ (*Sum of* first 25*terms*)

4. The sum of the first 8 terms of an arithmetic sequence is 34 and the sum of the first 9 terms is 38. What is the value of the 9th term?

5. An arithmetic series has 24 terms. The sum of the t_2 and t_{23} is 45. What is the sum of all the terms?

6. Given the two arithmetic series, which one has a greater sum?
$S_1 = 3 + 7 + 11 + \text{........} + 87$ OR $S_2 - 8 + -3 + 2 + 7 + \text{.....}97$

7. Rogers charges $50 a month and $0.10 a minute. Bell charges $25 a month and $0.25 a minute. If Sharon uses 100 minutes a month, which cell phone provider would be cheaper for her?

8. If Sharon uses 5 additional minutes each month, which provider would be cheaper after 3 years? What is the total cellular cost of 3 years for each plan?

9. What is the sum of the first 50 positive odd integers? Write a formula for the first 'n" positive odd integers:

10. What is the sum of the first 100 positive even integers? Write a formula for the first "n" positive even integers

11. What is the sum of all the multiples of 7 between 10 and 200?

12. What is the sum of all the multiples of 12 between 100 and 1000?

13. The sum of the arithmetic series (-300)+(-297)+(-294)+…+306+309 is

    a) 309   b) 927   c) 615   d) 918   e) 18

14. Four numbers are in an arithmetic sequence and their sum is 82. The third term is three times bigger than the first term. How much is the 4th term greater than the 2nd term?

15. The first term of an arithmetic series is 6, the common difference is 7, and the sum is 2814. How many terms are in the series?

16. The first three terms of an arithmetic sequence is given by the following expressions: $2x+1,\ 4x,\ 5x+2$. Find the sum of the first 10 terms

17. In an arithmetic series, the sum of $a_1 + a_2 = 25.5$ and $a_3 + a_4 = 39.5$. What is the sum of the first 10 terms?