

Name: _____

Date: _____

Precalculus 11: HW 1.1 Arithmetic sequences

1. Given each of the following sequences, indicate whether it's an arithmetic sequence. Explain why or why not:

a) 2, 8, 14, 20,....	b) 4, 7, 11, 16, 22,...
c) 3, 9, 27, 81....	d) 2, 4, 8, 16, 32...
e) 100, 90, 80, 70, 60,...	f) $\frac{4}{3}, \frac{3}{2}, \frac{5}{3}, \frac{11}{6}$

2. Given each arithmetic sequence below, find the value of the first term t_1 , common difference d , and the value of the n^{th} term t_n that is requested: Use the equation $t_n = a + (n-1) \times d$ to evaluate t_n :

	t_1 or a	d	t_7 (7^{th} term)	t_{11} (11^{th} term)
i) 41, 34, 27, 20....				
ii) 4, 10, 16, 22,				
iii) -24, -12, 0, 12,				
iv) $\frac{24}{5}, \frac{14}{5}, \frac{4}{5}, \frac{-6}{5}, \dots$				
v) $\frac{22}{3}, \frac{47}{6}, \frac{25}{3}, \frac{53}{6}, \dots$				

3. Find the missing values for each of the arithmetic sequences. Show all your work:

a) $\square, \square, \square, 17, 21$	b) $\square, \square, 26, \square, 16$
c) $108, \square, \square, \square, 40$	d) $\square, \square, 14, 18, 21$

4. Given the equation, find the value of the first 3 terms:

a) $t_n = 4 + 5n$	b) $t_n = 7 + (n - 1)8$
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5. Given the following arithmetic sequences, find out how many terms there are and the equation of the General Term: Use the equation $t_n = a + (n - 1) \times d$ to evaluate "n": Show all your work:

a) 5, 9, 13,..... 209	b) -210, -207.5, -205,.....45
Number of terms General Term:	Number of terms General Term:
c) $\frac{1}{2}, \frac{7}{6}, \frac{11}{6}, \dots, \frac{29}{2}$	d) $\frac{4}{5}, \frac{2}{15}, \frac{-8}{15}, \dots, \frac{-126}{5}$
Number of terms General Term:	Number of terms General Term:

6. Jimmy works as a vendor at the PNE selling frosted malts. His boss pays him \$47 on the first day of work and increases his pay by \$2.50 a day after each month. How much will he earn a day after working 13 months?

7. A sequence $a_1, a_2, a_3, a_4, \dots$ is an arithmetic sequence if and only if:

- | | |
|-------------------------------------|---|
| a) All the terms are positive | c) All the terms have a positive difference |
| b) All the terms are getting bigger | d) All the terms have the same difference |

8. What is the seventh term of an arithmetic sequence with a first term of nine and a common difference of twelve?

9. What is the common difference of an arithmetic sequence if the second term is 4 and the eight terms is 100?
10. How many terms are in a sequence if the first term is 14, fourth term is 38, and the last term is 190?
11. The first three terms of an arithmetic sequence is given by the following expressions: $2x + 1$, $4x$, $5x + 2$. Find the value of "x" and the value of each term:
12. Consider the following arithmetic sequence, which term is the first positive term? -16 , -14.75 , $-13.5...$
13. A nine term arithmetic sequence $a_1, a_2, a_3, a_4, \dots$ satisfies $a_1 + a_3 = 14$ and $a_2 + a_4 = 25$. What is the value of the first four terms?