9.2 Arithmetic Sequences and Series

Friday, May 01, 2015 10:55 AM

Arithmetic Sequence

A sequence whose <u>Consecutive</u> terms have a Common difference.

 $a_1, a_2, a_3, a_4, \dots, a_n$ is an arithmetic sequence if there is a number "d" (common difference) such that $a_2-a_1=d \qquad a_3-a_2=d \qquad a_4-a_3=d$

8, 15, 22, ... the common difference is 7
22-15=7

Ex. 1 Is the sequence orithmetic? If so, why?

- a) 4,7,10,13,...13-10:3 Yes, b/c the

 10-7:3

 2-4:3 Common diff. is 3. 3. 3. 3. 3. 3.
- c) 1,4,4,16, ...

 No, b/c no common

 diff.

 On=0²

Ex. 2 State the next 3 terms and the common difference.

- a) -5,7,14,... 31,43,55 d=12
- b) -12,-1, 10, 21,32,43 d=11
 - c) 1+15,1+8,1+1,... d:-7 [-6,1-13,1-20

a) Show that Sn=3n+5 is an arithmetic sequence. State the first term and the common difference.

5/=8

4-3

b) Show that an = 3-4n is an arithmetic sequence. State the first term and the common difference.

Cy: -1

c) Show that $a_n = \frac{1}{4}(n+3)$ is an arithmetic sequence. State the first term and the common difference.

d= 14

The not tern of an Arithmetic Sequence an= a + (n-1)d < common difference 1st term looking

Ex. 4 Find the indicated term of the crithmetic squence.

a) 20th term

M With term

Ex.5

a) Find the first term of the sequence for which a = 197 and d=10.

$$a_{n}=a+(n-1)d$$
 $197=a+(31-1)(10)$
 $197=a+300$
 $a=-103$

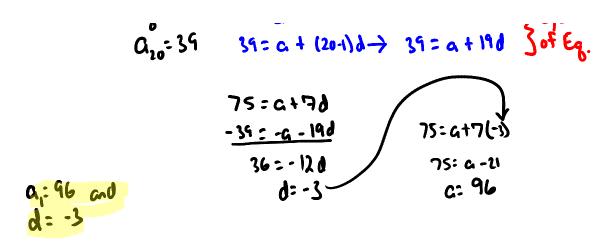
b) Find the first term of the sequence for which $a_{yy}=229$ and d=-8.

$$224 = 0 + (44 - 1)(-3)$$

 $224 = 0_1 - 344$
 $0_1 = 573$

ex 6

a) The 8th term of an arithmetic sequence is 75; the 20th term is 39. What is the common difference and α_1 ? $\alpha_2 = 10 - 11$ $\alpha_3 = 10$ $\alpha_4 = 10 - 10$ $\alpha_5 = 10$ $\alpha_$



HW 9.2 Tb ps 635 #'s 2, 4, 10, 12, 18, 30, 36, 44,