Test Average = 84%

Class ends at 1:50   (Special Event)

Quiz Thes Feb 27   Section 3.1

3.2 Cont'd

Arithmetic sequence:

$$3, \underbrace{5}_{}, \underbrace{7}_{}, 9, \dots$$
$$\quad +2 \quad +2$$

Ex: An arithmetic sequence has
$a_6 = 13$ and $d = -4$. Find a_1.

$$a_n = a_m + (n-m)d$$

larger index $\nearrow$ smaller index $\uparrow$

Sub
$n = 6$
$m = 1$: $a_6 = a_1 + 5(-4)$
$d = -4$

$$13 = a_1 \quad -20$$

$$33 = a_1$$

Ex: An arithmetic sequence has
$a_6 = 21$ and $a_{18} = 45$.
Find a_1 and d.

Find d : $a_n = a_m + (n-m)d$

$$n = 18 \ ; \quad a_{18} = a_6 + 12d$$
$$m = 6$$
$$45 = 21 + 12d$$
$$24 = 12d$$
$$2 = d$$

Find a_1 :
$$a_n = a_m + (n-m)d$$

$d = 2$
$m = 1$ $\therefore \quad a_6 = a_1 + 5(2)$
$n = 6$.
$$21 = a_1 + 10$$
$$11 = a_1$$

Arithmetic Series : A sum

in which the next term
is the previous term plus
a constant d.

example : $2 + 5 + 8 + \cdots$
$ \underbrace{}_{+3} \underbrace{}_{+3}$
$ +3 \quad +3$

Recall S_k is the sum of the first k terms of a series.

Fact

For arithmetic series:

$$S_k = \frac{k}{2}(a_m + a_n)$$

$$S_k = \frac{k}{2}\left[2a_m + (n-m)d\right]$$