

Assignment
P. 626 (6-40 even)

9.2 Arithmetic Sequences & Partial Sums

Arithmetic - has a common difference (d)

(6) 4, 9, 14, 19, 24

$\begin{array}{ccccccc} & \nearrow & \nearrow & \nearrow & \nearrow & & \\ & +5 & +5 & +5 & +5 & & \end{array}$

So this is **Arithmetic**
 and common difference
 $d = 5$

Some of the problems are
Not Arithmetic

(12) $\ln 1, \ln 2, \ln 4, \ln 8$

$\begin{array}{ccccccc} & \searrow & & \searrow & & \searrow & \\ & 0 & \nearrow & \nearrow & \nearrow & \nearrow & \\ & & +\ln 2 & +\ln 2 & +\ln 2 & +\ln 2 & \end{array}$

$\ln 1 = 0$

Arithmetic
 $d = \ln 2$

use
rules of
logs
+ means •

$\ln 2 + \ln 2$
 $\ln(2 \cdot 2)$
 $\ln 4$

$\ln 2 + \ln 2 + \ln 2$
 $\ln(2 \cdot 2 \cdot 2)$
 $\ln 8$

(14) write 1st 5 terms, determine if arithmetic.

$n = 1$

$a_n = 100 - 3(n)$

$a_1 = 100 - 3(1) = 97$

$a_2 = 100 - 3(2) = 94$

$a_3 = 100 - 3(3) = 91$

$a_4 = \quad = 88$

$a_5 = \quad = 85$

Arith; $d = -3$

see the pattern

Nth term of Arith Seq

$$a_n = a_1 + (n-1)d$$

22) $a_1 = 15$ $d = 4$

$$a_n = 15 + (n-1)4$$
$$= 15 + 4n - 4$$

$$a_n = 4n + 11$$

27) $a_1 = 5$ $a_4 = 15$

Find d

$$d = \frac{15 - 5}{4 - 1} = \frac{10}{3} = d$$

$$a_n = 5 + (n-1)\frac{10}{3}$$
$$= 5 + \frac{10}{3}n - \frac{10}{3}$$

$$a_n = \frac{10}{3}n + \frac{5}{3}$$

35) $a_8 = 26$ $a_{12} = 42$

Don't know a_1 or d

$$a_n = a_1 + (n-1)d$$

$$26 = a_1 + (8-1)d$$

$$26 = a_1 + 7d$$

$$42 = a_1 + (12-1)d$$

$$42 = a_1 + 11d$$

$$-1(26 = a_1 + 7d)$$

$$42 = a_1 + 11d$$

$$-26 = -a_1 - 7d$$

$$42 = a_1 + 11d$$

$$16 = 4d$$

$$4 = d$$

$$a_n = 4n - 6$$

- $a_1 = -2$
- $a_2 = 2$
- $a_3 = 6$
- $a_4 = 10$
- $a_5 = 14$

could have also use what I did in #27 to find d

plug into an equation to find a_1

$$42 = a_1 + 11(4)$$

$$-2 = a_1$$

$$a_n = -2 + (n-1)4$$

$$a_n = -2 + 4n - 4$$

37) $a_1 = 15$

$$a_{n+1} = a_n + 4$$

$$n=1 \quad a_{1+1} = a_1 + 4$$

$$a_2 = 15 + 4 = 19$$

$$n=2 \quad a_{2+1} = a_2 + 4$$

$$a_3 = 19 + 4 = 23$$

$$a_4 = 23 + 4 = 27$$

$$a_5 = 27 + 4 = 31$$

$$15, 19, 23, 27, 31$$