

## Chapter 4 / Example 13

# Arithmetic sequences

For each of the following arithmetic sequences:

- i State its first term and common difference.
  - ii Find the 10th term of the sequence.
  - iii Determine, giving your reasons, whether 49 is an element of the sequence.
- a**  $u_n = 3n + 1, n \in \mathbb{Z}^+$ . Remember that  $\mathbb{Z}^+$  is the set of positive integers:  $\{1, 2, 3, \dots\}$ .
- b** 206, 199, 192, ...

Press **MENU** 7 **TABLE**. Press **F5** SET and change the settings so that the table starts from 1 and ends at 30.

Press **EXIT**.

Table Setting

X

Start: 1  
End : 30  
Step : 1

Type  $3x + 1$  and press **EXE** to enter the first equation as Y1.

Table Func : Y=

Y1:  $3x+1$  [—]  
Y2: [—]  
Y3: [—]  
Y4: [—]  
Y5: [—]  
Y6: [—]  
[SELECT] [DELETE] [TYPE] [STYLE] [SET] [TABLE]

Press **F6** TABLE.

A table of values is displayed.

From the table,  $u_1 = 4$ .

By subtracting two consecutive terms,  $d = 3$ .

X	Y1
1	4
2	7
3	10
4	13

1

[FORMULA] [DELETE] [ROW] [EDIT] [GPH-CON] [GPH-PLT]

Scroll down the table using **▼**.

From the table,  $u_{10} = 31$ .

Y1:  $3x+1$

X	Y1
8	25
9	28
10	31
11	34

31

[FORMULA] [DELETE] [ROW] [EDIT] [GPH-CON] [GPH-PLT]

Scroll further down the table using **▼**.

From the table,  $u_{16} = 49$ .

Y1:  $3x+1$

X	Y1
15	46
16	49
17	52
18	55

49

[FORMULA] [DELETE] [ROW] [EDIT] [GPH-CON] [GPH-PLT]

## Chapter 4 / Example 13

# Arithmetic sequences

Press **EXIT** to display the equation entry screen.

In the sequence, 206, 199, 192, ...

$$u_1 = 206.$$

By subtracting two consecutive terms,  $d = -7$ .

The sequence is  $u_n = 206 + (n-1)(-7)$

Type  $206 + (x-1)(-7)$  and press **EXE** to enter the equation as Y2.

Table Func : Y=

Y1:  $3x+1$  [—]

Y2:  $206+(x-1)(-7)$  [—]

Y3: [—]

Y4: [—]

Y5: [—]

Y6: [—]

[SELECT] [DELETE] [TYPE] [STYLE] [SET] [TABLE]

Press **F6** TABLE.

As stated,  $u_1 = 206$  and  $d = -7$ .

X	Y1	Y2
1	4	206
2	7	199
3	10	192
4	13	185

1

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Scroll down the table using **▼**.

From the table,  $u_{10} = 143$ .

Y2:  $206+(x-1)(-7)$

X	Y1	Y2
8	25	157
9	28	150
10	31	143
11	34	136

143

[FORMULA] [DELETE] [ROW] [EDIT] [GPH-CON] [GPH-PLT]

Scroll further down the table using **▼**.

$$u_{23} = 52 \text{ and } u_{24} = 45.$$

49 is not an element of the sequence as it lies between the two values.

Y2:  $206+(x-1)(-7)$

X	Y1	Y2
22	67	59
23	70	52
24	73	45
25	76	38

52

[FORMULA] [DELETE] [ROW] [EDIT] [GPH-CON] [GPH-PLT]