SEQUENCES AND SERIES CALTECH:

Arithmetic Sequence and Series:

1. From the sequence 1, 4, 7, 10, ... find the 30th term.
   MODE > STAT(3) > A + BX(2) (this means arithmetic progression)

X	Y
1	1
2	4

   then, AC > TYPE '30' > SHIFT > KEY 1 > REG(5) > y (5)
   display should be: 30y
   answer: 88

2. From the sequence 1, 4, 7, 10, ... 49 is what term of the progression?
   MODE > STAT(3) > A + BX(2) (this means arithmetic progression)

X	Y
1	1
2	4

   then, AC > TYPE '49' > SHIFT > KEY 1 > REG(5) > x (4)
   display should be: 49x
   answer: 17

3. If the first term of an arithmetic progression is 3 and its tenth term is 39, find the common difference.
   MODE > STAT(3) > A + BX(2) (this means arithmetic progression)

X	Y
1	3
10	39

   display should be: 2y – 1y (because common difference is the difference of the two consecutive terms. Instead of 2y – 1y, you can also do 4y – 3y, 7y – 8y, or even 101y – 100y, as long as the terms are consecutive.

   answer: 4

4. Find the sum of the first 30 terms of the sequence 1, 4, 7, 10, ...

   MODE > STAT(3) > A + BX(2) (this means arithmetic progression)

X	Y
1	1
2	4

Display should be:

$$\sum(Xy, 1, 30)$$

answer: 1335

Geometric Sequence and Series:

1. Find the 15th term of the geometric progression 3, 6, 12, 24, 48, ...
   MODE > STAT(3) > AB^X(6) (this means geometric progression)

X	Y
1	3
2	6

   display should be: 15y
   answer: 49 152

2. If the first term of a geometric progression is 4 and the fifth term is 324, what is the common ratio?
   MODE > STAT(3) > AB^X(6) (this means geometric progression)

X	Y
1	4
5	324

   then, AC > SHIFT > KEY 1 > REG(5) > B (2)
   display should be: B
   answer: 3

3. Find the sum of the first 15 terms of the geometric progression 3, 6, 12, 24, 48.
   MODE > STAT(3) > AB^X(6) (this means geometric progression)

X	Y
1	3
2	6

   display should be:

$$\sum(Xy, 1, 15)$$

   answer: 98 301