

Chapter 1 / **Example 15**

Finding the number of terms in a geometric sequence

Find the number of terms in each of these geometric sequences:

a 0.15, 0.45, 1.35, \dots , 12.15**b** 440, 110, 27.5, \dots , 0.4296875

$$u_1 = 0.15, r = 3$$

$$u_n = 0.15 \times 3^{n-1} = 12.15$$

Press $[f1]$ $[y=]$ to display the equation entry screen.Type $0.15 \times 3^X - 1$ in the first equation as Y_1 .

Plot1 Plot2 Plot3

$Y_1 = 0.15 \times 3^{X-1}$

$Y_2 =$

$Y_3 =$

$Y_4 =$

$Y_5 =$

$Y_6 =$

$Y_7 =$

$Y_8 =$

Press $[2nd]$ $[f5]$ ($[table]$)From the table, $Y_1 = 12.15$ when $n = 5$

This sequence has 5 terms.

X	Y1			
0	.05			
1	.15			
2	.45			
3	1.35			
4	4.05			
5	12.15			
6	36.45			
7	109.35			
8	328.05			
9	984.15			
10	2952.5			

$Y_1 = 12.15$

$$u_1 = 440, r = 0.25$$

$$u_n = 440 \times 0.25^{n-1} = 0.4296875$$

Press $[f1]$ $[y=]$ to display the equation entry screen.Type $440 \times 0.25^X - 1$ in the first equation as Y_1 .

Plot1 Plot2 Plot3

$Y_1 = 440 \times 0.25^{X-1}$

$Y_2 =$

$Y_3 =$

$Y_4 =$

$Y_5 =$

$Y_6 =$

$Y_7 =$

$Y_8 =$

Press $[2nd]$ $[f5]$ ($[table]$)From the table, $Y_1 = 0.4296875$ when $n = 6$

This sequence has 6 terms.

X	Y1			
0	1760			
1	440			
2	110			
3	27.5			
4	6.875			
5	1.71875			
6	.4296875			
7	.10742			
8	.02686			
9	.00671			
10	.00168			

$Y_1 = .4296875$