

Chapter 1 / **Example 23**

## Finding the sum of a geometric series

Determine how many terms are required for the sum of the geometric series given by

$$\sum_{i=1}^n 3 \times 2^i \text{ to exceed } 1000.$$

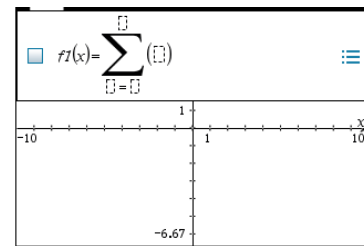
Open a new document and add a Graphs page.

The entry line is displayed at the top of the work area.

The default graph type is function, so 'f1(x)= ' is displayed.

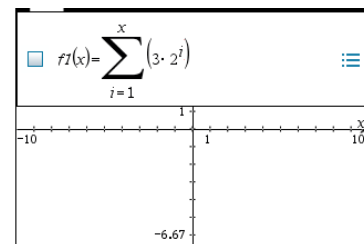
Press  $\left[\frac{\square}{\square}\right]$  and select  $\left[\frac{\sum}{\square}\right]$  with the trackpad.

The template has spaces for the variable,  $i$ , the limits and the function.



Type  $I = 1$ ,  $X$  and  $3 \times 2^I$  in the first equation as  $Y_1$ .

Press  $\text{enter}$ .

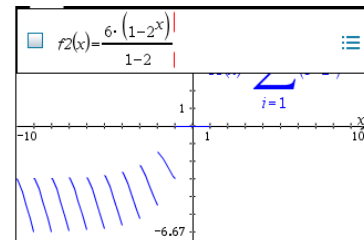


Press  $\text{ctrl}$   $\text{T}$ .

A table of values is displayed alongside a graph.

You can scroll down the table using  $\blacktriangledown$  on the touchpad.

From the table, when 8 or more terms are added, the sum exceeds 1000.



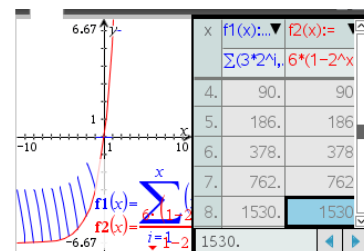
Instead of using the summation function, you can use the

result:  $\sum_{i=1}^n 3 \times 2^i = \frac{6(1-2^n)}{1-2}.$

Press  $\text{ctrl}$   $\text{T}$  and press  $\text{tab}$  to display the entry line again. This time 'f2(x)= ' is displayed.

Type  $\frac{6(1-2^X)}{1-2}$  using Use the fraction template  $\left[\frac{\square}{\square}\right]$   $\left[\frac{\square}{\square}\right]$   $\left[\frac{\square}{\square}\right]$ .

Press  $\text{enter}$ .



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Press **ctrl** **T**.

The values calculated for the sum are the same in *f2* as they are in *f1*.

