3.6 Sequences and Series

3.6.1 Sequences

The TI-89 has many tools in the `MATH List` menu (from the `HOME` screen, choose `[MATH]` 3) that are useful in analyzing sequences and series. The `seq(` command allows you to generate the terms of a sequence. Consider $a_n = \frac{(-1)^n}{n}$. Select `seq(` from the `MATH List` menu. Complete the command as shown in Figure 145 and press ENTER. (The command requires that you enter a formula for the sequence, the variable of the sequence, a starting value for the variable, a stopping value for the variable, and optionally a step size for incrementing the variable.) In the example, the first five terms of the sequence will be displayed on the screen, in increments of size 1.

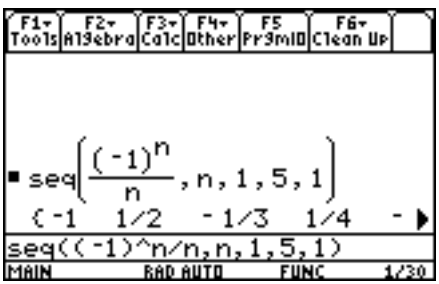

Figure 145: Generating the terms of a sequence

3.6.2 Series

The `sum(` command adds the terms of a sequence. For example, to add the terms of the sequence in Section 3.6.1 above, go to the Home Screen, and move the cursor to the extreme left position. Select `sum(` from the `MATH List` menu. Move the cursor to the extreme right position and input the parenthesis, then press ENTER. The sum of the first five terms of the sequence will be displayed on the screen (Figure 146). For the sum of other sequences, select `sum(` then `seq(`, and complete the

command with the new formula for the sequence, the variable of the sequence, a starting value for the variable, and a stopping value for the variable. Then press ENTER.

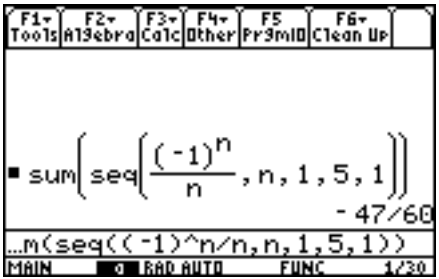

Figure 146: The sum of the terms of a sequence

Starting from the Home Screen, the Calc menu also has the command $\sum($ used for adding terms of a sequence when the increment of the variable is always one. The command requires that you enter a formula for the sequence, the variable of the sequence, a starting value for the variable, and a stopping value for the variable, as in Figure 147.

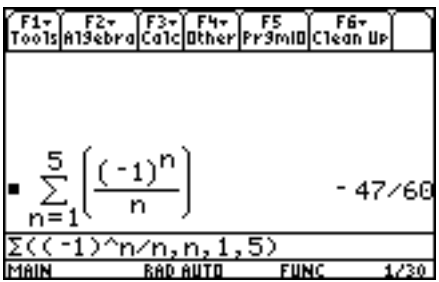

Figure 147: The sum of the terms of a sequence using $\sum($